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## **Household Economic Well-Being Study # 3**

## **Guatemala-CAP Income Generation Activities Project (AGIL)**

**Implemented by:**  
Abt Associates Inc.  
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# **Household Economic Well-Being Study – 2 (Encuesta Bienestar Familiar-2)**

**Prepared for**

**Proyecto Ágil  
Abt Associates  
Guatemala City, Guatemala**

**Faroglobal, Inc.  
Timothy Farrell, PhD  
December 2003**

FAMILY ECONOMIC WELL-BEING  
In  
THE ZONAPAZ  
Of  
GUATEMALA

PART I  
REVIEW OF CHANGES IN HOUSEHOLD ECONOMY  
INCOME AND EXPENSES

Timothy Farrell, PhD  
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## ***Introduction***

This is the third and last in a series of studies conducted on the behalf of USAID, Proyecto Ágil and Abt Associates to measure quasi-longitudinally the socioeconomic conditions of a selected population in the Zona Paz region of Guatemala.

The main purpose of this study is to provide up-to-date basic statistical socio-economic data on eleven municipios en la Zonapaz de Guatemala. This investigation is based on the original U.S. Agency for International Development (USAID) Family Economic Well-Being Study (Estudio de Bienestar Familiar or EBF) conducted by the Universidad del Valle, Guatemala (UVG), in collaboration with the Instituto Nacional de Estadística (INE) of Guatemala in 1999<sup>1</sup>, and a second “barometer study” of a reduced sample in September 2001<sup>2</sup>

In 2000, Abt Associates<sup>3</sup> was awarded a contract by USAID to implement and manage the Ágil Project in the areas in which the original EBF was conducted. In 2001, USAID and Project Ágil determined that it would be beneficial for USAID program activities under the income generation/food security Strategic Objective to conduct a “barometer reading” of the current situation in a sample of the communities surveyed in 1999. This study, the third and final, is conducted at the end of Project Ágil's activities conducted under the AID contract, and thus represents the cumulative results of any interventions conducted under the Ágil contract and other USAID activities in the communities studied.

The study is “blind” since the investigators have never known the specific NGOs through which Ágil has worked, nor do we know the specific interventions or target groups or households targeted by Ágil and the NGOs.

Due to the high level of homogeneity found in both EBF-1 and EBF-2 the sample size for this third study was limited to a little over half (1225) of the original EBF-1 (2100) households. Further, one municipio, San José, Petén, was dropped from Ágil's program activities, and was therefore excluded from both EBF-2 and the current study

In addition, to refine the instruments some variables have been modified significantly (especially those relating to conflict-related migration), and others added and eliminated. Nevertheless, most of the basic instruments used in this study are directly comparable to those in the original. In addition, all households interviewed in the present survey were included in the original study; hence, there is good comparability of the sample between Time (1) and Time (3). The reduced sample barometer study Time (2), is also a sub-sample of the original, but was only conducted in 6 municipios, and therefore it is not possible to assure that households represented in that study are also represented in EBF-3 (Time 3).

This final study was conducted in the following 11 municipios in the Zonapaz: Barillas, and San Mateo Ixtatán, Huehuetenango; Ixcán, Quiché; La Libertad, Petén; Santa Cruz and Nebaj, Quiché; Rabinal, Baja Verapaz; Chisec, Alta Verapaz; and, San José Poaquil and San Martín Jilotepeque, Chimaltenango.

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<sup>1</sup> Estudio Bienestar Familiar, 2000. Universidad del Valle, Guatemala. W. Timothy Farrell.

<sup>2</sup> Household Economic Well Being Study – 2. Faroglobal, Inc. May, 2002.

<sup>3</sup> Abt Associates, Washington, DC and Guatemala City.

A total of 1225 households were surveyed, using the original maps, sectors, and housing units developed and updated by INE in 1999 and more recently modified for the 2002 Census. The survey instrument<sup>4</sup> consists of some 1200 items measuring basic demographics, education and literacy, occupation, migration, household expenditures and income, housing and household inventories, land tenure and value, credit, community participation and communication.

The study was conducted from 13 July through 3 August 2003, by three teams of four interviewers and one supervisor each, and supported by a technical consultant and the principal investigators.

## ***Methodology***

The methodology employed in this study conforms to standard social survey research principles, using a sub-sample of the original simple random sampling strategy employed in EBF-1. Some modifications were made based on the findings of the earlier study that indicated a high degree of homogeneity in the most remote sectors<sup>5</sup>. In addition, findings had indicated that some variables could be improved and that some should be eliminated. These modifications and their anticipated impact, if any, are discussed below.

## **Sample Design and Modifications**

One of the main concerns of this study was to include the more isolated elements of the population in the Zonapaz. Earlier studies primarily focused on the “urban centers” of the municipios, and do not include significant parts of the rural population in cantons, fincas, and other smaller aldeas and hamlets. This is particularly true of the extremely isolated and dispersed population units. This strategy was followed in EBF-3, although somewhat modified for reasons of homogeneity and cost in EBF-2.

## **Instrument Design and Modifications**

As noted, a number of improvements were made in order better to capture certain information, particularly among children under 12 and their participation in the economy, education and more uniform and precise information on land tenure. We also added items on information and communication resources.

Anthropometry measures were conducted in EBF-1 but dropped for both EBF-2 and EBF-3 due to the existence of data from other sources and the cost involved in collecting this data.

## **Staff Selection and Training**

An experienced local survey operations management consultant was contracted as Technical Consultant. This individual supervised both previous EBF Surveys. Three supervisors, all with extensive survey experience, rounded out the supervisory team.

Twelve experienced data collection interviewers were selected, all of who had recent survey experience. Several of these individuals had participated in either the EBF1 or EBF2 activities.

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<sup>4</sup> See Appendix I for the data collection instruments and Appendix II for Instruction Manual.

<sup>5</sup> In 1999, INE maps of all 12 municipios were up-dated by physical inspection and confirmed during that survey, and before the random selection of the households to be interviewed. The original sampling procedures are included as Appendix III.

Consequently the normal formal training was conducted in only 2.5 days rather than the 3 to 5 days normally required for interviewers. This included presentation and discussion of the interview schedules and Instruction Manual as well as role-playing of interviews.

There was no pre-testing because the previous databases (EBF-1 and 2) provided adequate feedback on the instrument and question items.

### **Interviewers' Instruction Manual**

An Interviewers' manual was developed that defines the terminology used in the survey instruments, instructions on coding, instructions on interviewing in general, and all necessary codes not directly printed on the questionnaires. This Manual is in Appendix II.

### **Data Collection and Supervision**

Three teams were formed: one team was responsible for data collection in Huehuetenango; another for the core areas of Quiché; and the third for Ixcán, the Verapaces and el Petén, or Nebaj; Rabinal and La Libertad. All teams worked full time without holiday or weekend breaks.

The Technical Consultant and the Principal Investigator visited both teams in the field for a total of six days with the aims of reviewing completed instruments, resolving coding concerns, case substitutions and any other details in doubt. Additionally, these trips were used to collect informal ethnographic data on the communities visited.

### **Substitutions**

Substitutions were employed in the case of refusals or in cases where families had moved (unless in the same sector), were in migratory status out of the sector, or for other reasons could not be found for interview after a reasonable effort.

Substitutions were made using the 1999 household list for the relevant sector. This did not compromise the random sampling methods since all were included in the original random sample. There were no instances of having to replace households from other sectors.

The majority of the cases substituted were due to temporary migration<sup>6</sup> or other temporary travel such as visiting relatives. In addition, there were cases where people had gone to nearby market towns and had not returned. Quoting from one supervisor:

“The team did everything possible to locate the selected households by asking the neighbors or a local authority...In cases where the household head or spouse was at work (or elsewhere locally) we did wait for them to return, sometimes till after dark. However, after trying all possibilities with out success – (usually) because of migration or because they were not going to return that day – then these was cases were substituted (from the original list in the same sector).”

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<sup>6</sup> This may be important in interpreting the results of the “seasonal migration for work” question, which shows a smaller number than might be anticipated. See analysis section below.

## ***Data Management***

### ***Quality Control***

#### **1. Field Reviews**

Data were reviewed in the field each evening by the interviewers and the Field Supervisors. Errors or doubts about coding were corrected and re-interviews were conducted if supervisors considered it necessary. Senior management field visits supplemented these reviews especially with respect to coding problems.

Communication by cellular telephone facilitated quick responses to specific items so that there was no need to wait for on-site field support. When questions were of a general nature, field supervisors were contacted by cell phone to provide the necessary information.

#### **2. Full Review of Completed Questionnaires**

A thorough review of each questionnaire was conducted on return from the field by three data-entry operators, two of whom also worked as data-collectors, under the supervision of the Principal Investigator. Spot-checks of completed reviews were conducted by the Principal Investigator. Decisions were made regarding any coding ambiguities, missing data. Additional codes were added if necessary to account for any significant “other” codes that might have been discovered during data collection.

### ***Data Organization and Coding Manuals***

- Because the study (EBF1) was not initially planned as longitudinal, some coding and data organizational problems arose in restructuring the data for longitudinal analysis. In many cases this meant returning to the original data sets of EBF1 and EBF2 to ensure their compatibility with EBF3 (and vice versa).

### ***Data Entry Programming***

CSPRO 2.3 was used as the data entry program. CSPRO replaces ISSA and IMPS software as census and survey data entry systems. It is the US Census Bureau standard and is used by the Guatemalan Instituto Nacional de Estadística (INE) as its basic survey data entry software.

### ***Data Entry***

Contract staff, supervised by the Project Administrator, did data entry. A sample of randomly selected cases was spot-checked for both random and systematic errors. Where random errors were found, these were corrected on a case-by-case basis. Systematic errors – those occurring in specific sample sectors or attributable to a particular questionnaire section, a specific team, community or interviewer consistently – required another review of the corresponding series of questionnaires.

Data entry staff was trained by project staff on the substance of the questionnaire items, the organization of the data sets and the coding manuals. They also participated in reviewing some of the coding items – particularly the conversion of cuerdas to manzanas - the principal land-measure used in the analysis.



### ***Data Verification***

Aside from the steps outlined above to ensure data quality, once the data were prepared for analysis a number of statistical operations were conducted to discover other sorts of errors. These operations included:

- Cross tabulation on key variables – age and civil status, education, income, expenses, land tenure and use were the primary variables used to discover potential error sources.
- Again, discovery of systematic vs. random error resulted in a more detailed and thorough check of the principal “causative” variables: interviewer, entry clerk, etc.

Based on these quality control measures, we feel that the data ultimately submitted for analysis is as accurate and clean as possible.

### ***Data Analysis Procedures***

The Statistical Package for the Social Sciences (SPSS version 11.0) was used for all analyses in this study. The same package was used for the analyses of EBF-1. This is an up-date of the analysis package used for EBF-1 and EBF-2.

Because this is primarily a descriptive study, the basic procedures employed are descriptive statistics and cross-tabulation analysis for presentation. Factor analysis (Principal Components Analysis) has been used for scale reduction and construction. One-way Analysis of Variance is used to determine significance of differences between certain criterion variables such as municipios, ethnicities, language, education, income, expenses and others as well as to measure differences over the three time periods of the studies.

Relational analyses in the form of parametric and non-parametric correlations, multiple regression analysis, were used to explore the data rather than to assert relationships between or among variables. No causal models were developed or tested, as there is no hypothesized dependent variable (e.g. some anticipated out come or result of some specific project or intervention), to test at this time.

## **Inflation and Mandated Wage Increases**

Calculation of inflation rates and measurement of income changes due to legislated increases:

1. **Inflation** is calculated for all measured expenses over the period 1999 through July 2003. Two main sources have been used. The first is the monthly “Indice de Precios al Consumidor” (Consumer Price Index), published by the National Statistical Institute (INE). The second is from the Banco de Guatemala’s monthly review of macro-economic indicators. Both of these sources indicate a national inflation rate of about 19% since January of 2000.

The correspondence between these two sources is very high, although methodologically different. The best estimate for inflation for the purposes of this study is the INE Consumer Index (CI), since it is measured monthly from systematic surveys, and the EBF series used basically the same classifications and definitions of items included in the INE index.

It is a fortuitous coincidence that INE indexes its inflation at January 2000 = 100. Since EBF-1 data were collected in October 1999, this provides a reasonable benchmark against which to measure subsequent consumer indexed inflation.

The main problem with use of the CI is the source of measurement vs. EBF sample frame and selection. INE measurements are taken in the market itself, while our measures are at the household level. In addition, the CI is measured in major urban centers rather than at more distant distribution or market points. The table below shows the difference between the origin of the CI measurements and EBF samples.

REGION	DEPARTMENTS REPRESENTED	SITE(S) OF INE – CI MEASURES	EBF COMMUNITIES REPRESENTED
II – Norte	Alta Verapaz Baja Verapaz	Coban	Chisec and San Pedro Carchá, AVP; Rabinal BVP
III – Central	Sacatepéquez Chimaltenango Escuintla	Escuintla	San Martín Jil. and San José Poaquil, Chimaltenango
VII – Nor occidente	Huehuetenango Quiché	Huehuetenango	San Mateo Ixtatán and Barillas, Huehuetenango; Sta. Cruz Quiché and Nebaj, Quiché Ixcan, Quiché <sup>7</sup>
VIII – Petén	Petén	Flores San Benito	San José Petén <sup>8</sup> La Libertad Petén

Consequently, the “price-at-market” in the measured cities will differ to some extent from the expenses actually paid in the EBF communities, so that the 19% general inflation for household expenses probably under-estimates the actual inflation at the “points-of-sale” in most communities. Nevertheless, the INE CI provides a basis for comparison of household expenses and income purchasing power that is standard across all regions and communities.

- Mandated wage increases were obtained from the Guatemalan Chamber of Commerce. These have been calculated as percent of increase against the date for which they became effective. In our calculations, we have not included mandated bonuses as part of the “salary and wages” variable, so that “salary and wages” reflects only direct income and does not include bonuses, per-diem, in-kind payment or other benefits. Where these are presented, they are termed “salary related items” (SRI). No insurance benefits, if any, such as IGSS are included in any of the measurements or calculations.

<sup>7</sup> For all analytical and organizational purposes in this study, Ixcan is treated as a separate entity from Quiché. This is due to its status as a resettlement area, multi-ethnic population, and geographic location, including its difficult accessibility to Santa Cruz, its nominal political-administrative capital.

<sup>8</sup> San José Petén was dropped from the study after the 1999 EBF-1 survey.

## Limitations and Organization of this Report

**1. Limitations.** This report is principally about economic changes as measured over three points during the four year period 1999 – 2003. The baseline year (1999) corresponds to the nearest point in time prior to any interventions or inputs stimulated by the Agil Project, and the last measurement corresponds to the end of those inputs (July – August 2003). There is currently no plan for longitudinal follow-up once the inputs of USAID and Project Agil via various non-governmental organizations (NGOs) have had a “fair chance<sup>9</sup>” to demonstrate longer-term impact.

Because of this the inputs of the various organizations must be viewed as ‘synergistic’ rather than systematic, since each operating organization or NGO has project-specific objectives, and multiple time frames.

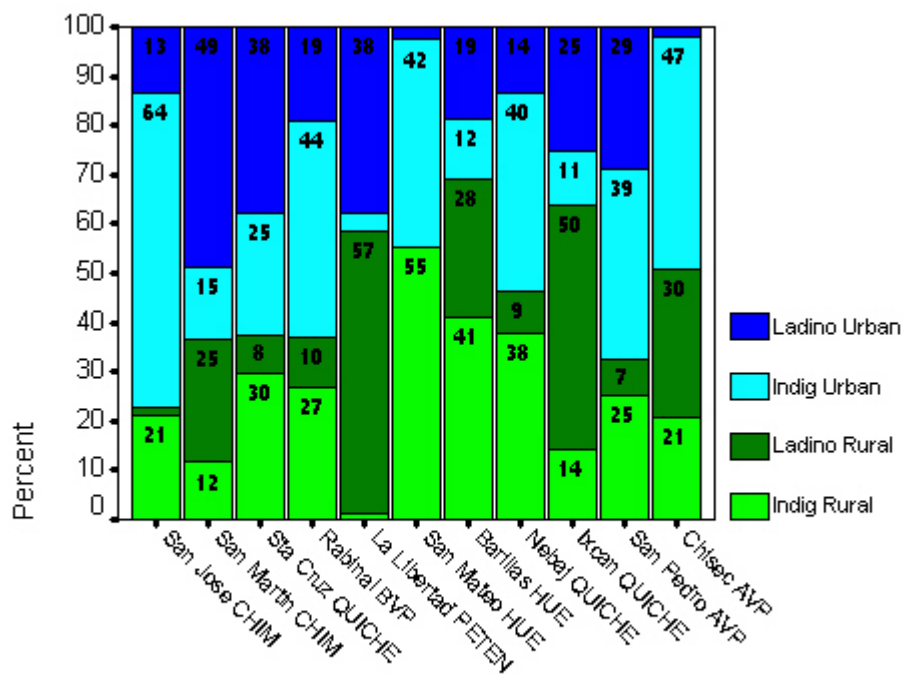
As a consequence, the findings of these studies represent a mix of both secular change<sup>10</sup> in the national and regional environments as well as largely ‘undefined directed change’ in the local environments of the 11 communities studied.

**2. Organization.** Because change is the principal focus of this report, we will initially concentrate on the main variables measured that reflect changes in economic well-being. This is followed in Section 2 by a presentation of the findings of EBF-3 which are principally descriptive.

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<sup>9</sup> By “fair chance” is meant that the interventions and inputs of funds and technical resources initiated by change agents have a reasonable chance to show an impact or quantifiable result over time. For recent inputs (e.g. those in 2002 and 2003), this most recent series of measures does not provide a “fair chance” for desired changes to take root and be tested statistically.

<sup>10</sup> Secular change refers to ongoing ‘natural’ changes in the social, economic and political environments at the national and regional levels. That is, whatever changes are found in particular instances or communities is considered to be due to ‘naturally occurring’ changes due to international, national and regional policies that affect the country as a whole. Directed change, on the other hand, refers to specific changes that occur due to specific policies, goals and objectives of agents of change, in this case projects sponsored and financed by USAID and others via local and international NGOs.

**Composition of the Sample****Sample Sizes by Year of Collection**

1999	2050
2001	625
2003	1225
<b>Total</b>	<b>3900</b>

## ***Household Income and Expenses – Change Over-Time***

This section is presents data relating to wage income and all major household expenditures over the three measurement periods. A key element, of course, is inflation over the past four years. This is taken into account in some of the graphs and tables that are presented. The effects of legislated wage increases are also taken into account as appropriate.

### **Income**

Income is admittedly one of the most difficult concepts to measure in household surveys in rural areas of developing countries. People in many cases don't know with any precision what they earn and/or are reluctant to provide that information for fear of tax issues, jealousy or other factors. In addition, they are right to ask why it is any of the survey (or interviewers') business. Whatever the reason(s), income-reporting tends to be understated rather than overstated<sup>11</sup>.

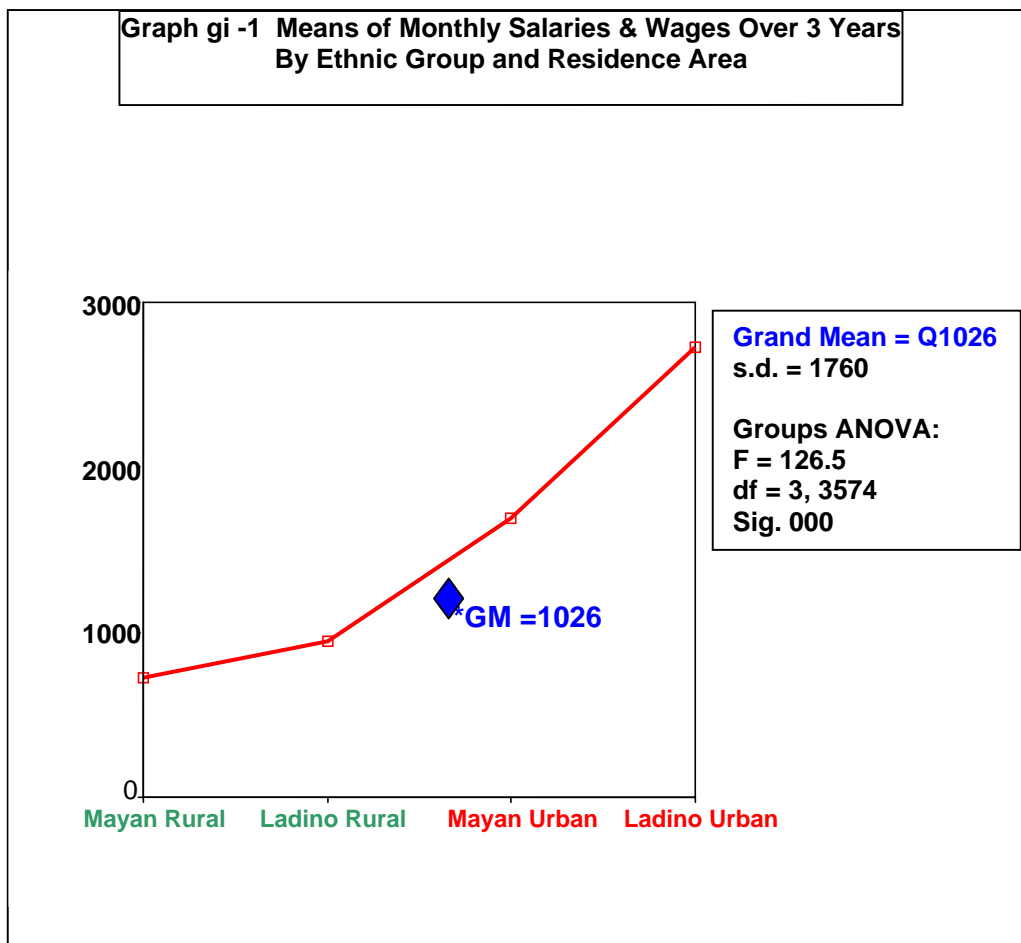
The advantage in this series of surveys is that we are measuring the "same" people and households over three intervals and therefore have consistency – if not precision – of measurement.

There are four gross categories of households in these surveys: rural mayans and rural ladinos; and, urban mayans and urban ladinos. In earlier reports I have argued that the greater differences are not found in ethnicity alone, but in combination with residence (rural and urban). That theme continues to be developed and supported by the data in the third wave of interviews as will be shown in the following graphs and discussions.

The following Graph gi – 1 shows the cumulative means of salaries and wages over the 4 year period (1999-2003) by ethnic group and residence area. The Grand Mean (Q1026) clearly separates the groups along residence, rather than simple ethnic dimensions.

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<sup>11</sup> Better measures are expense patterns and house and possessions scales (these are presented in a later section).

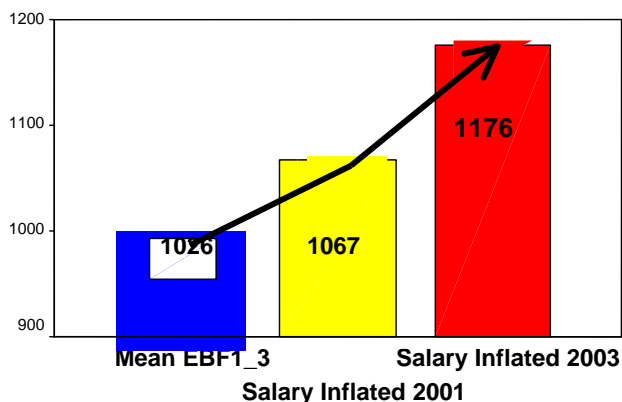


Urban residents, regardless of ethnicity, consistently tend to receive greater wage and salary income than their rural counterparts. Nevertheless, inflation as measured by the INE Consumer Index has significantly surpassed wage earnings. The expected exception is Urban Ladinos who, as a group, earned significantly more than both the inflation rate and all other groups in the overall study. Consequently it is clear that both residence (exposure, access), and ethnicity (education, social status) combine to play a clear role in wage and salary (cash income) earnings. Clearly, rural households fall far short of meeting the pressures of inflation by wage and salary income alone.

The following chart (gi-2) shows the grand mean for salaries and wages along with the imputed inflation for 2003.

**Graph gi – 2**  
**Salary and Wage Inflation – 1999 - 2003**

Mean Salary & Wages compared with  
Estimated Adjustments for Inflation

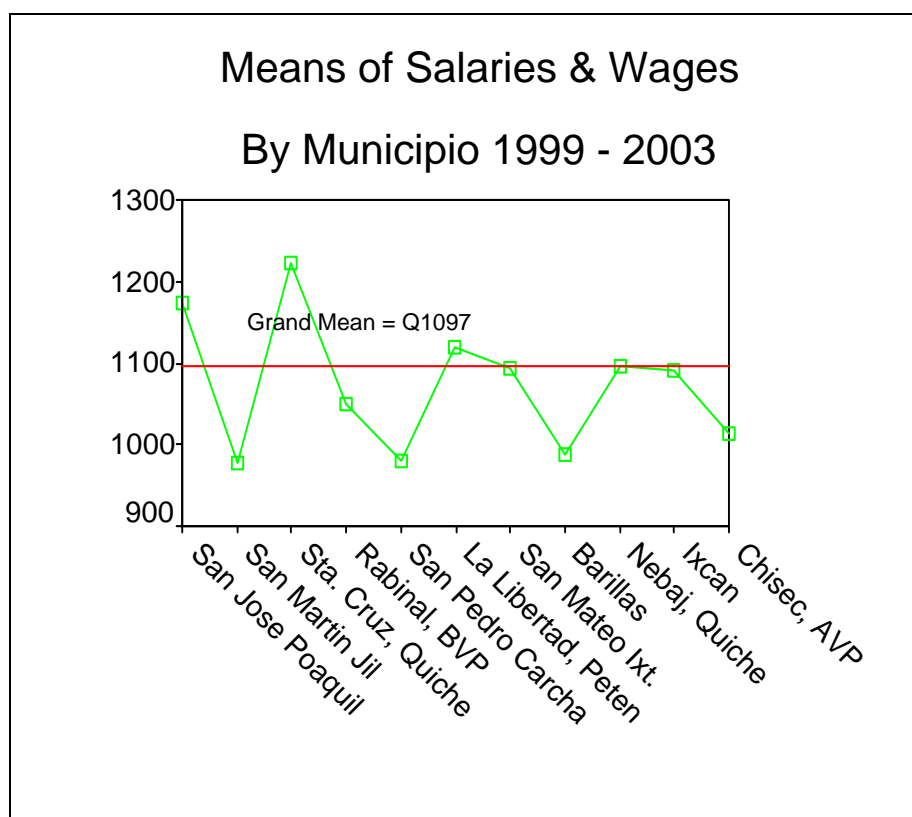


Estimates of effects on salary equivalents if salaries & wages had increased directly with inflation (heavy black line) of 8% (2001- yellow) and 19% (2003 red).

Base (blue) is the mean of salaries & wages 1999-2003.

This does not mean that traditional wealth (land) and income (crop production) are not important in determining wealth and overall income. Nevertheless, residence in more urbanized areas and its concomitant components such as exposure and access to information and resources plays a critical role in the generation of cash income.

Graph gi-3 on the following page summarizes the cash income earned by households from all municipios in the study.

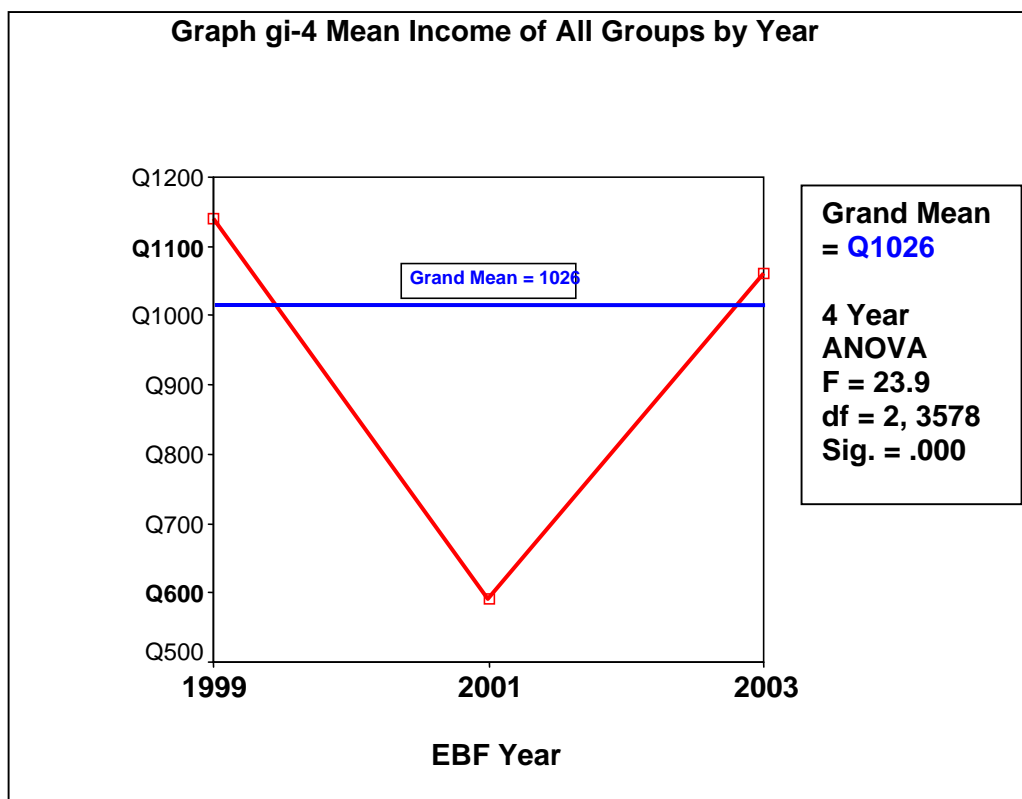


It is clearly the case that Santa Cruz Quiché, the most urbanized of municipios in the sample also generates the most cash income at the household level. Santa Cruz is followed by San José Poaquil, which is located near the urban center of Chimaltenango

In the graph below (gi-4), we can clearly see the difference in sampling frames in EBF-2 (1999). That sample, as mentioned previously, excluded the heavily ladino population in the city of Santa Cruz Quiche and the “urban village” of San José, Petén, as well as the “rurban<sup>12</sup>” villages of San Martin, Jilotepeque and San José Poaquil in Chimaltenango.

<sup>12</sup> By “rurban” I mean villages or population centers (usually municipio “*cabeceras*”) that are physically proximate to larger urban centers (sources of employment); yet maintain rural characteristics such as an agrarian-based and dependent economy, along with face-to-face economic relationships (vs. role-based economic relationships), and other traditional cultural indicators, often – but not always – including the principal use of one of the mayan languages in daily social intercourse within the village, and Spanish outside.



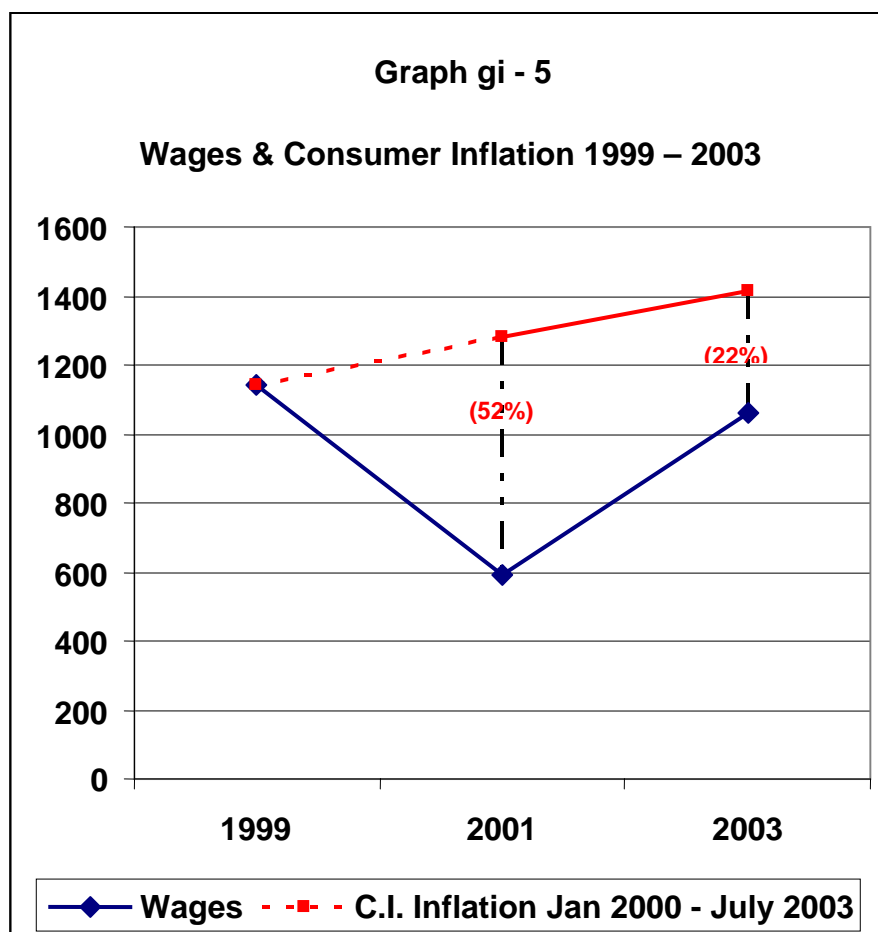


The following graph gi – 5 (next page), illustrates the effects of consumer indexed inflation on wages for 2001 and 2003. For those areas measured for the “barometer review” in EBF-2 (2001) and EBF-3 (2003), the percent difference in the table below (Table ti-1) from the consumer index is significant.

**Table ti-1 Changes in Consumer Index and Wages 1999 – 2003**

Year of Measurement	Consumer Index	Observed Wages x Year	Imputed Wages (at Index Rate)	Percent Difference
	CI	A	(B)=A*CI	((B-A)/B) * 100
1999	100	1141	Not Applicable	
2001	108	590	1232	(52.1%)
2003	119	1062	1385	(21.8%)

As can be seen, the 1991 sample (principally rural) had a 52% variance from the Consumer Index and the 2003 sample (the full sample frame) is currently at 22% variance from the measured Consumer Index. These data are represented graphically below.

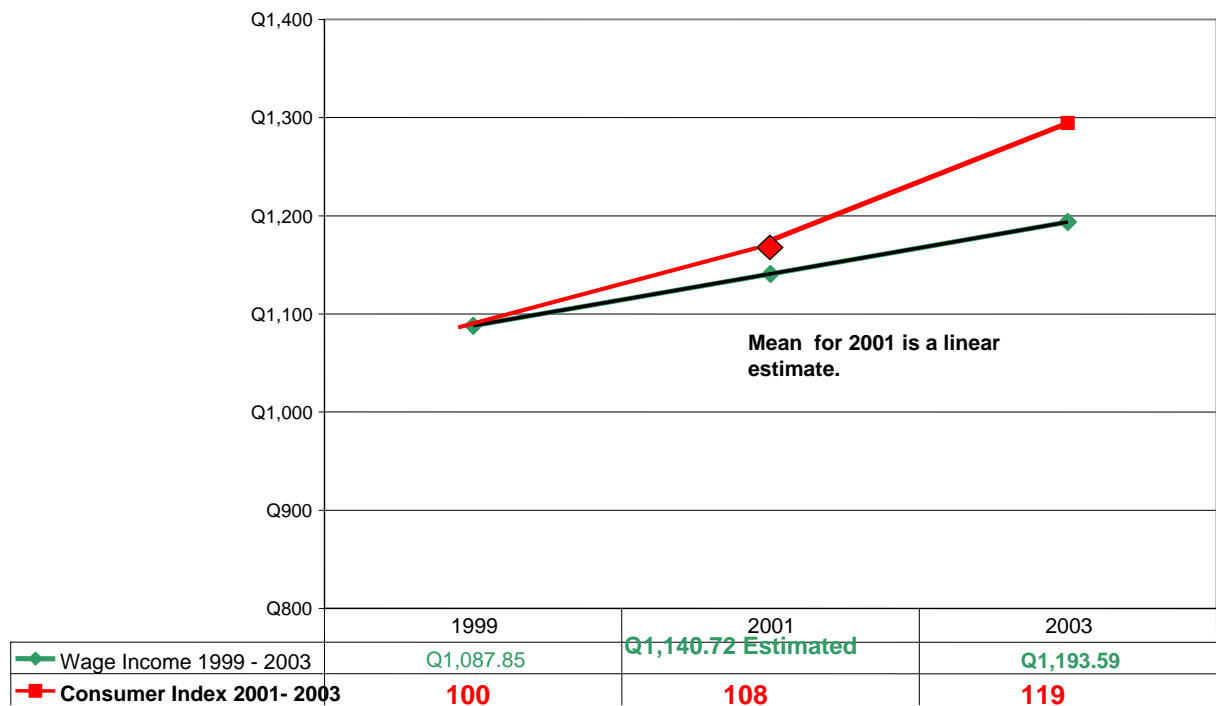


These data suggest that the more rural communities – as a group – have experienced a greater negative impact than their more urban and “rurbanized” counterparts. For example, the 2003 data for the 6 EBF-2 municipios have a monthly salary and wage mean of only Q962, or about Q100 less than for the full sample. Tentatively this would indicate that those households measured in EBF-2 (2001) did experience a significant increase in salaries and wages during the last two years from Q590 to Q962.

The following graph (gi-6) calculates only the differences between 1999 and 2003 (dropping the data from 2001<sup>13</sup>). A t-Test run on these data show no significant increase in income between the full samples in 1999 and 2003 ( $t = -1.87$ ,  $df = 2837$ ,  $sig. = .06$ )

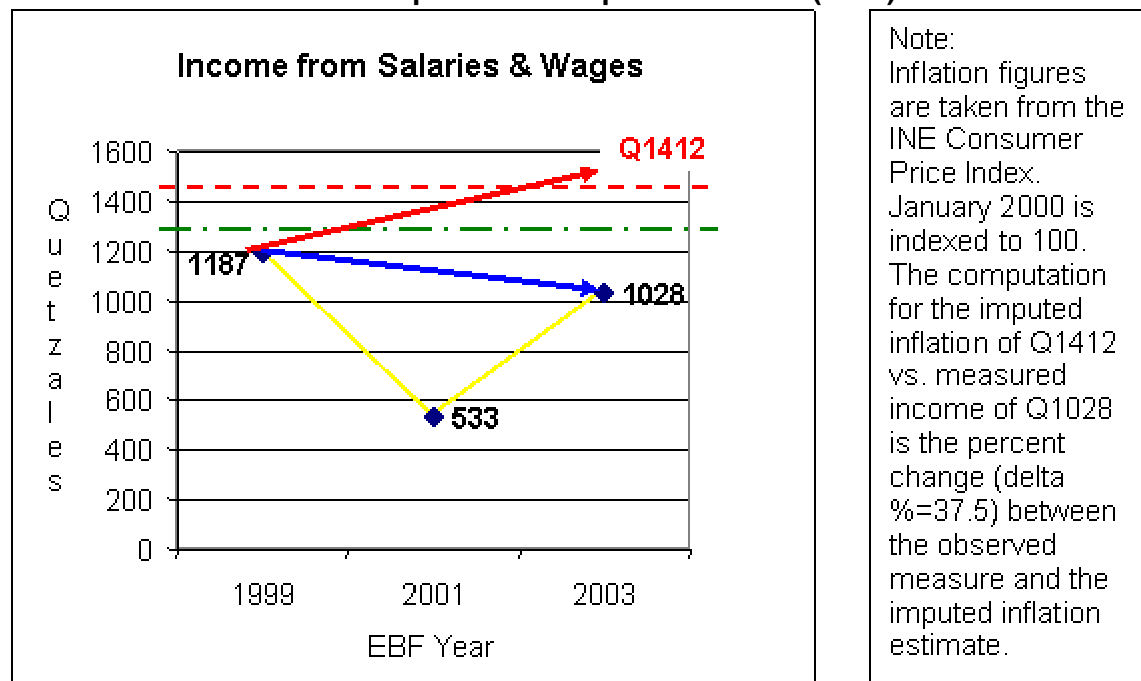
<sup>13</sup> Recall that the sample differed in 2001, and omitted Santa Cruz, San Martin, San José and Carchá, thus measuring more rural and isolated areas. This data includes the full range of variability based on the data from all municipios included in the study.

**Graph gi-6. Mean Income (All Cases) 1999 - 2003 vs.  
Consumer Index 1999 = 100 Converted to Quetzales**



Graph gi-7 (next page) presents shows the data at the different measurement points and compares these with the imputed inflation derived from the Consumer Index based on the mean income data from all 3 data collection points. The net result is an overall decrease in income against price increases over the four year period.

**Graph gi-7**  
**Mean Income from Salaries and Wages 1999 - 2003**  
**Compared with Imputed Inflation (2003)**



**Table ti - 2 Minimum Wages 1999 – July 2003**

Month & Year of Increase	Agricultural Workers' Minimum (Daily)	% Inc.	Non-Agricultural Worker's Minimum (Daily)	% Inc.
December 1999 (base)	19.65		21.68	
February 2000	21.62	9.1	23.85	9.1
December 2000	26.08	13.8	27.67	13.8
January 2002	27.50	8.8	30.00	7.8
January 2003	31.90	13.8	34.20	12.3
<b>Cumulative Wage Increase Percentage</b>		<b>38.4%</b>		<b>36.6%</b>

Nevertheless, calculating from the January 2003 minimum *legal* agricultural wage, an agricultural worker would need to work 44.3 days per month to make the imputed Consumer Index wage of Q1412 per month. Stated another way, in order to make the Consumer Index wage of Q1412, a laborer would need to receive Q54.31 per day 26 days per month. Thus, the minimum wage significantly trails the Consumer Index by about 41%<sup>14</sup>.

<sup>14</sup> Calculation of percent change:  $((Q54.31 - Q31.90) / Q31.90) * 100 = 41.2\%$ . This is the standard Delta % formula used in business calculations.

Between December 1999, and August 2001, the bonuses applied moved from Q36 and Q72 per month for agricultural and non-agricultural workers respectively to Q250 per month for all workers. This bonus is still in place, but is not taken into account in the salary and wage figures presented in the fore-mentioned data.

The overall picture of wages in the communities measured is that except for the urban ladino sample, there has been no real change in income as seen as purchasing power. In fact, one could interpret these data in such a way as to suggest that the sampled households are less well-off in terms of cash income than they were in 1999.

The following sections describe how this has affected expenditure patterns in the population and shows how selective decisions within consumer bundles reflect priorities within this population.

## ***Expenses***

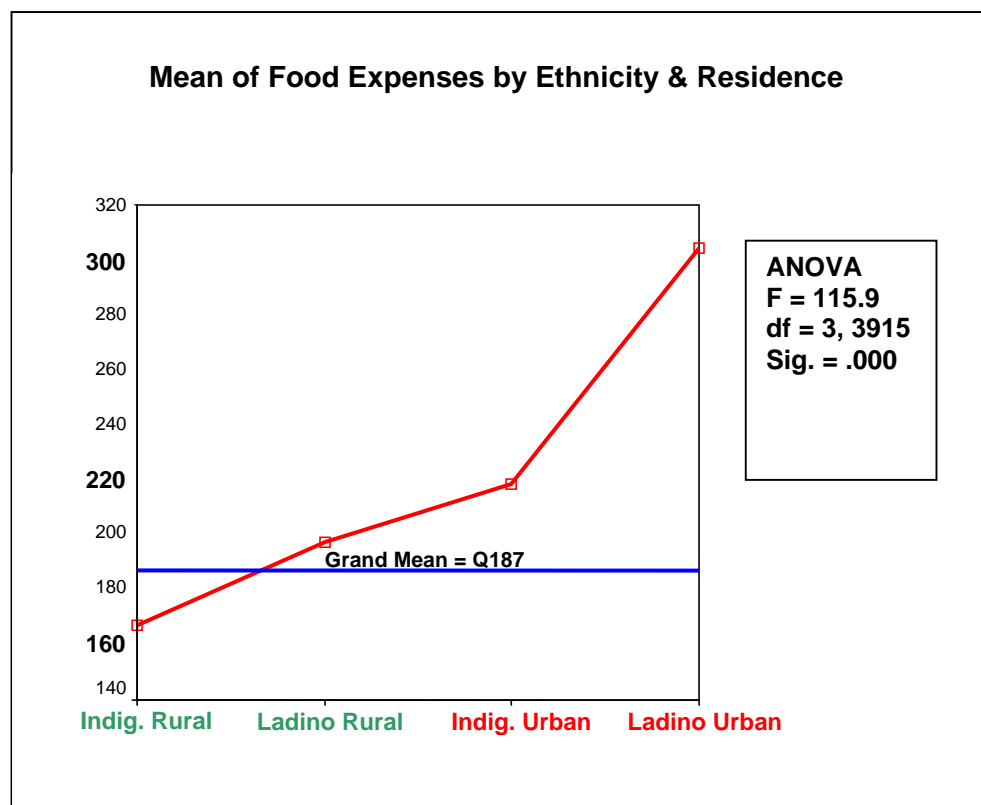
This section presents each type of expense by the following major “consumption bundles”: ***food; education; health; clothing; household maintenance; and personal expenses.***

All household expenses, including food, were measured identically in all three waves of interviews in the same population and sample. As a consequence, their comparability is very high. Additionally, the consumption bundles closely correspond to INE’s Consumer Index, thus making comparative statements regarding inflation effects very straightforward.

### ***1. Food Expenses***

Of all the household consumption bundles, food is probably the least flexible or substitutable, especially at these economic levels. In this section we will review the findings over time of changes in food expense patterns with respect to inflationary pressures.

The graph below shows the range of the mean expenses by ethnicity and residence in relation to the grand mean over the three measurement points. It clearly parallels the findings presented regarding income in graph gi-1. Urban residents spend more on food and rural mayans spend the least. Urban ladinos spending roughly double that of rural mayans and considerably more (about Q80) than urban mayans. Rural ladinos spend at about the mid-point between rural mayans and urban mayan groups.



The following table shows that our classification of the four groups is consistent over time.

**Food and Beverages by Ethnicity and Residence**

Waller-Duncan<sup>a, b, c</sup>

ETH_AREA	N	Subsets for alpha = .05			
		1	2	3	4
Indig Rural	2500	167.11			
Ladino Rural	562		197.52		
Indig Urban	637			218.53	
Ladino Urban	217				304.54

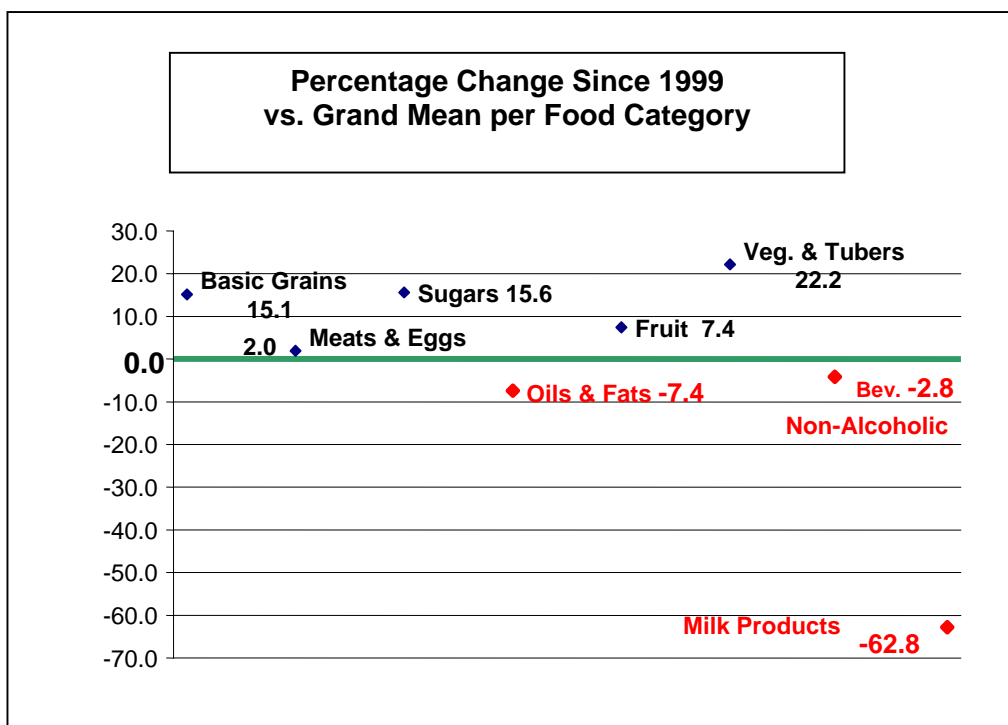
**Means for groups in homogeneous subsets**

a. Uses Harmonic Mean Sample Size = 478.611.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Type 1/Type 2 Error Seriousness Ratio = 100.

The next graph plots the food categories and the changes in the amount spent by percentage change since 1999. What is particularly interesting is that the lowest percent increase – 2% -- is in the “meat and eggs” (or high animal protein category). The CI country-wide price increase is about 15% (varying between 7% and 18%). This contrasts with the sharp decrease in milk and milk products (-63%) which carries about the same inflation CI rate (13%) as meat and poultry.



On the other hand, basic grain expenses (+15%) parallels but is less than the CI of 49%. Spending on sugar and sugar products (chocolate, preserves, candies, etc) coincides nearly exactly at 15% with the CI increase of 14%, and expenditures for vegetables and tubers increased by 22% compared with the CI of 31%.

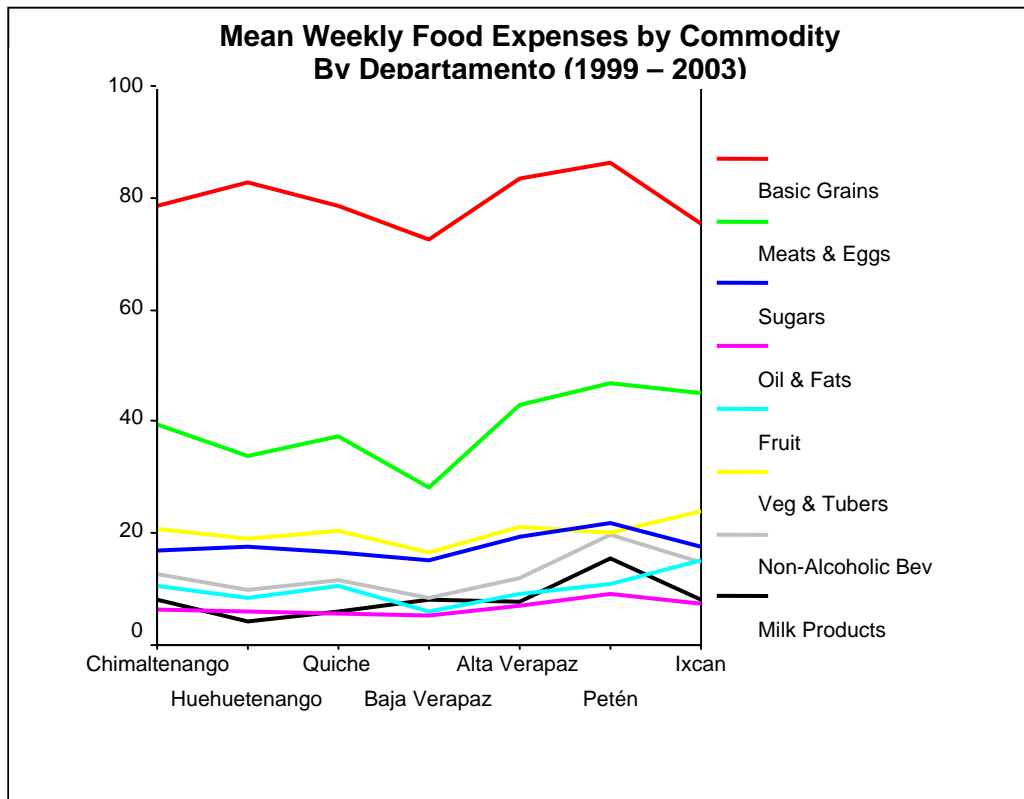
The intuitive and tentative explanations for this are based on ethnographic observations. In relatively isolated rural communities without electricity or refrigeration facilities, meat is only sold once or twice a week and butchers put out a red flag when meat (beef or pork) is available. In addition, the *absolute cost* of meat is high and often considered a luxury; people rarely buy a “large” portion at a time, and often buy only the cheapest – often just bones and fat for soups. Additionally, people who are paid daily and already living at the margin probably don’t have cash available for a “luxury” on a regular basis. Poultry, on the other hand, are often raised for their production value (eggs) and are consumed when their production value declines, but not necessarily purchased with cash.

On the other hand, basic grains, and sugars can have a low-unit absolute value and can be purchased in small quantities daily, consonant with daily wage payments. They are also easily stored if purchased in bulk or larger quantities as opposed to meats and fresh milk.

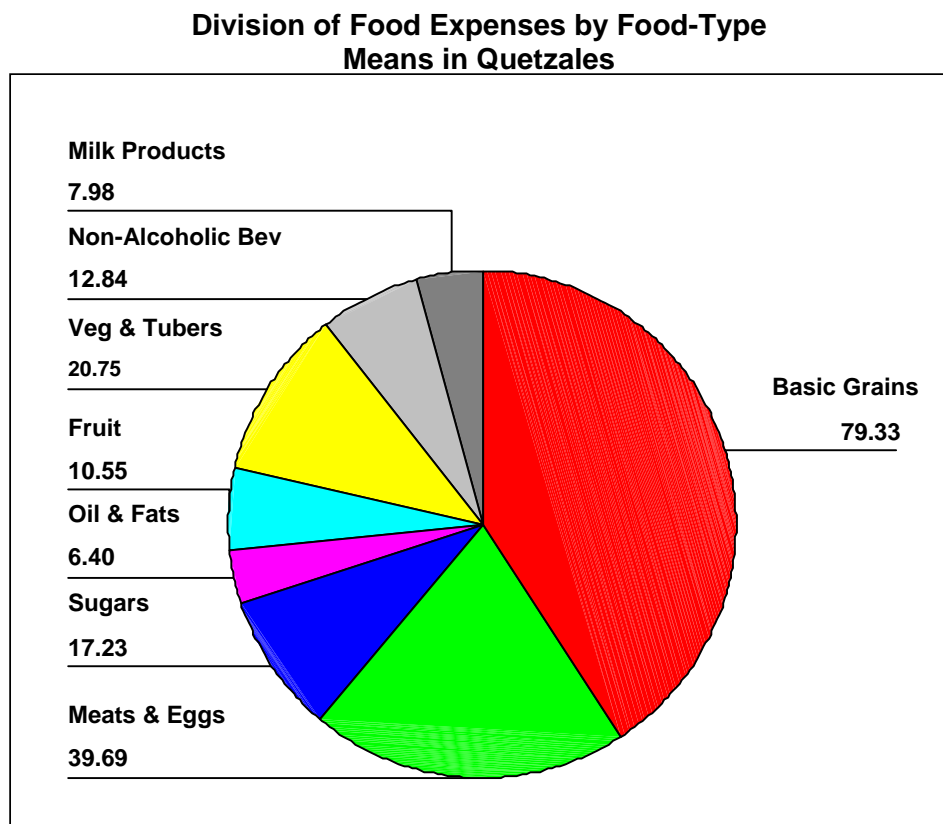
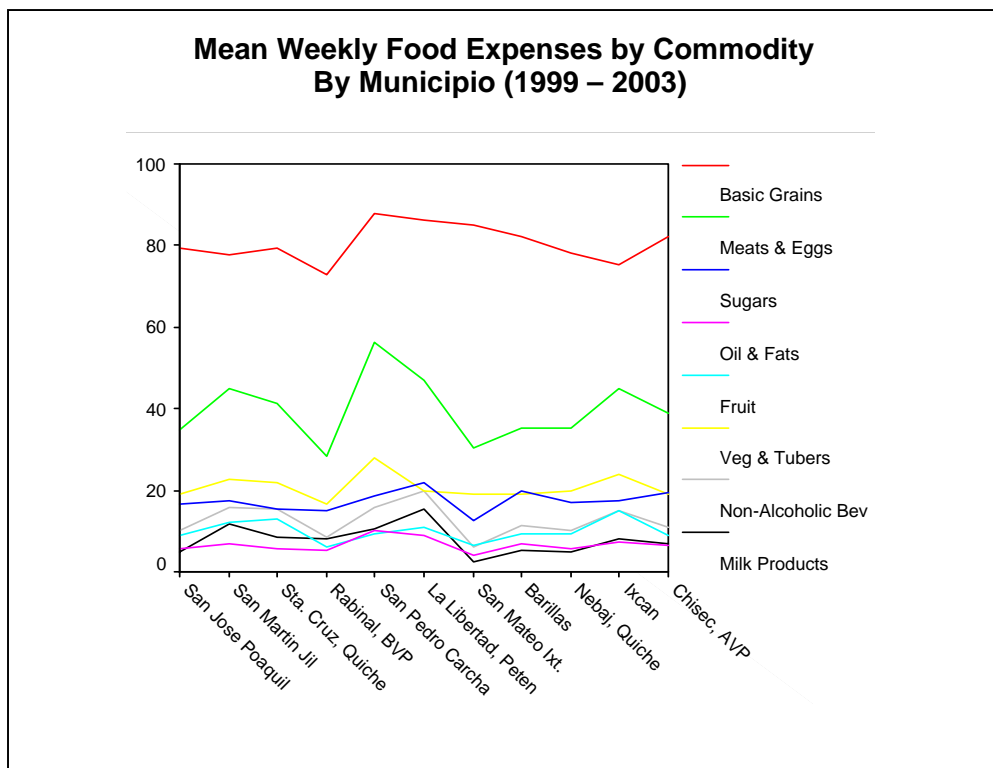
Further, basic grains, especially in the form of corn for tortillas, are considered an absolute necessity in rural Guatemala, thus it is not surprising to see an increase in expenses for basic grains. The difference between the amount spent as expressed as percent change over time and the CI rate is probably best explained by local production that is supplemented with purchase. Complete data are not available at this time to support this with any degree of certainty, although of those households growing corn in 2003<sup>15</sup>, about 90% retain an average of 16 *quintales* (about 1600 pounds) for household consumption.

<sup>15</sup> Unfortunately similar data is not available for the previous two surveys.

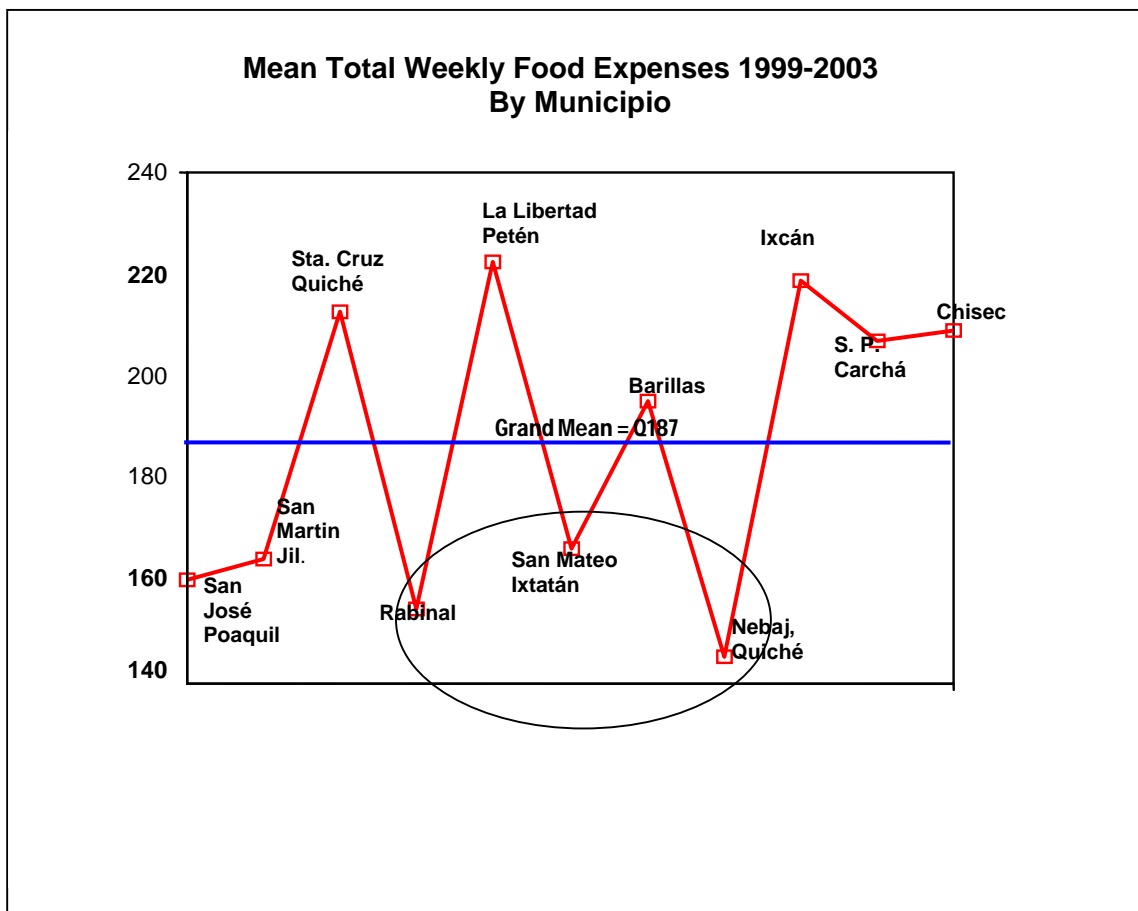
In the following two graphs, the overall mean of expense per food category is displayed by department and municipio. The breaks between basic grains, meat and poultry and other food classifications are readily observable for all municipios and departments.







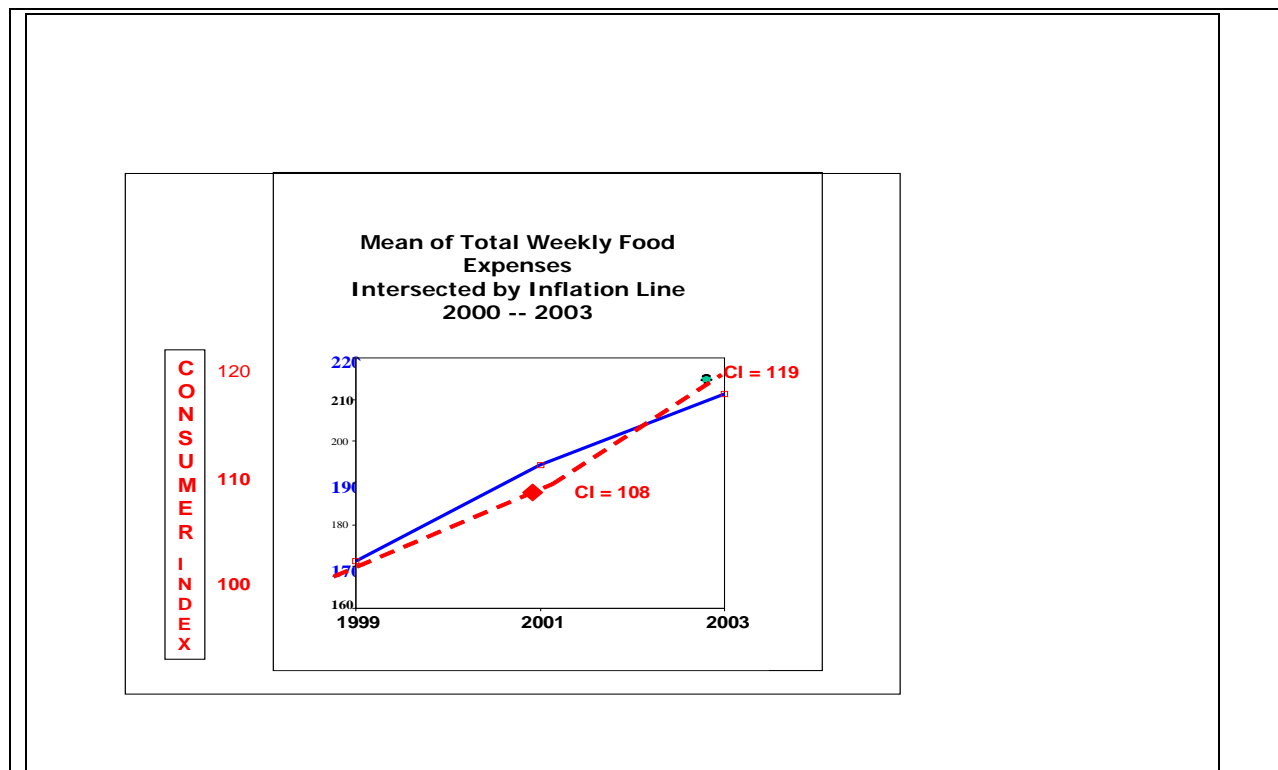
The following graph presents the total food expenses by municipio over the three measurement periods.



This chart is interesting for several reasons, not the least of which is the significant below-average food expenditures in Rabinal, San Mateo Ixtatán and Nebaj. Nebaj has been (and is) a major recipient of NGO attention for a number of years, and Rabinal is a major site of mass burials unearthed by forensic anthropologists after the armed conflict. San Mateo Ixtatán has been embroiled in internal disputes for a number of years, so it is understandable why assistance inputs may be problematic in that community vs. its relatively close neighbor Barillas and its surrounding aldeas.

Nevertheless, for Nebaj to be so low in food expenditures is remarkable because a good argument could be made that along with Ixcán, Nebaj meets the requirements both in time and intensity for a “fair test” for impact or results to be considered. The question arises: what is happening in Ixcán (for all its specific problems of heterogeneity) that is not happening in Nebaj, which is fairly homogeneous ethnically and linguistically.

The following graph shows the mean food expenditures in the full sample from 1999 to July – August 2003 intersected by the INE inflation CI.



As indicated in the Methodology section, the CI inflation level is calculated “at-point-of sale” in major towns and cities, while our measures are “point-of-purchase” by households. Therefore it is not surprising that reported expenditures in smaller communities are paying higher prices than the inflated Consumer Index. In this case, this works out to be roughly Q15 more than estimated inflation on the average for all communities.

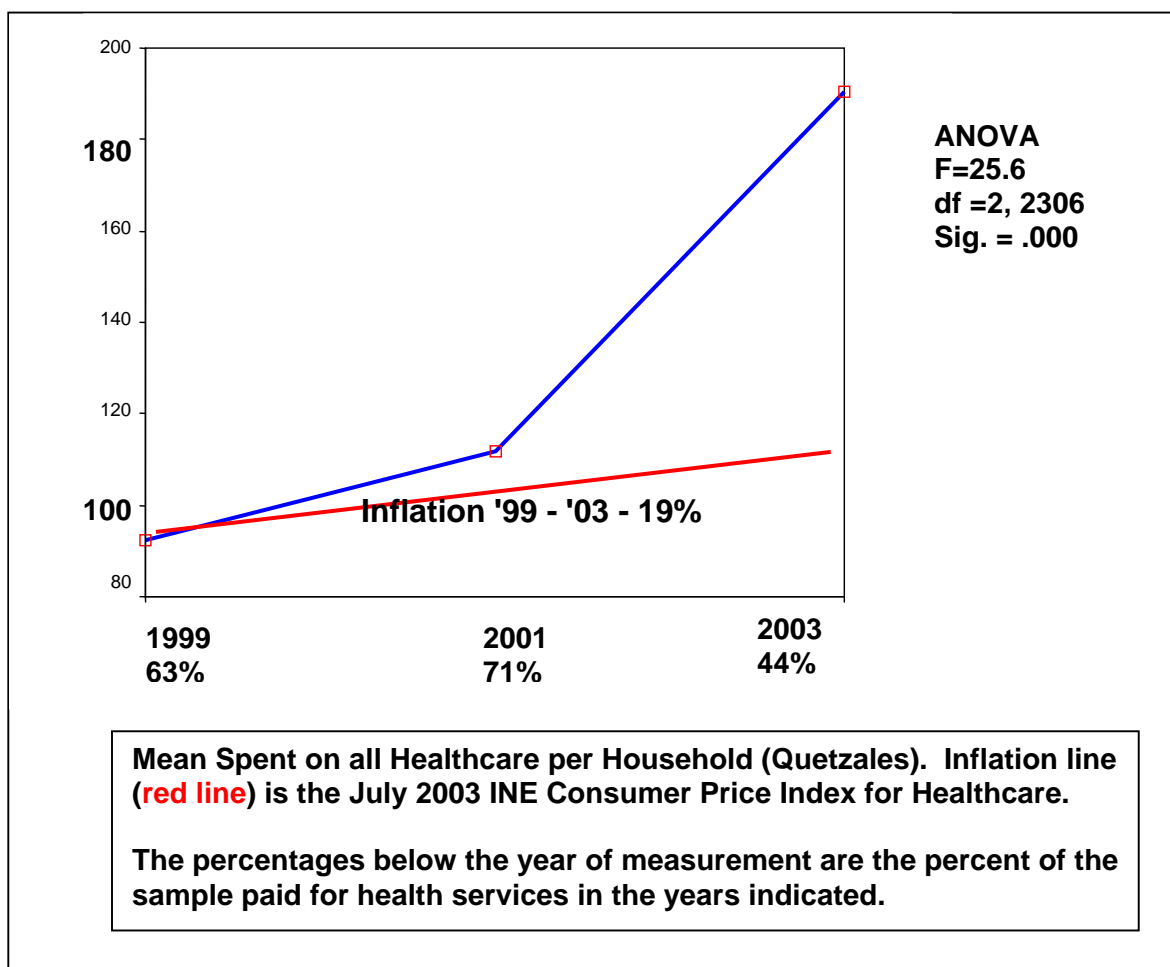
## 2. Health Expenses

The health care and services consumption bundle has somewhat more flexibility or elasticity than food. Health care can be postponed or even remain un-sought (at some probability risk) while not eating cannot be prolonged indefinitely (not-eating is not a rational economic decision over time). Nevertheless, serious illness cannot rationally be ignored indefinitely. Thus, in a constricted income environment, we may see adults electing to postpone treatment in the short-run while allocating resources to their children at a relatively constant rate. The net result, of course, is that there is a high risk that some of the illness symptoms postponed by adults may require much more extensive health interventions resulting in a greater overall cost. This notion is apparently confirmed in the next graph (gh-1).

Health costs as measured by health expenses by this population have skyrocketed over the past four years, but especially in the period 2001 – 2003, from an average of Q110 per month per

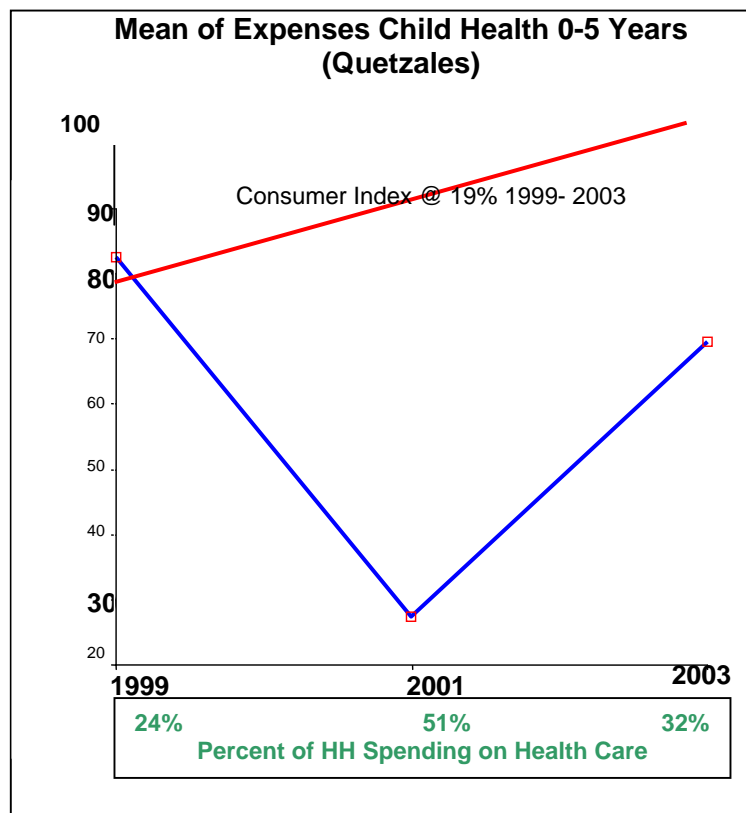
household to nearly Q190. At the same time, the number of percent of households electing to spend on health care (children and adults) first increased from 63% to 71% (1999 – 2001), and then dramatically decreased to only 44% in 2003.

**Graph gh-1**  
**Mean Amounts Spent on Health Last Month prior to Interview**  
**1999 – 2003**

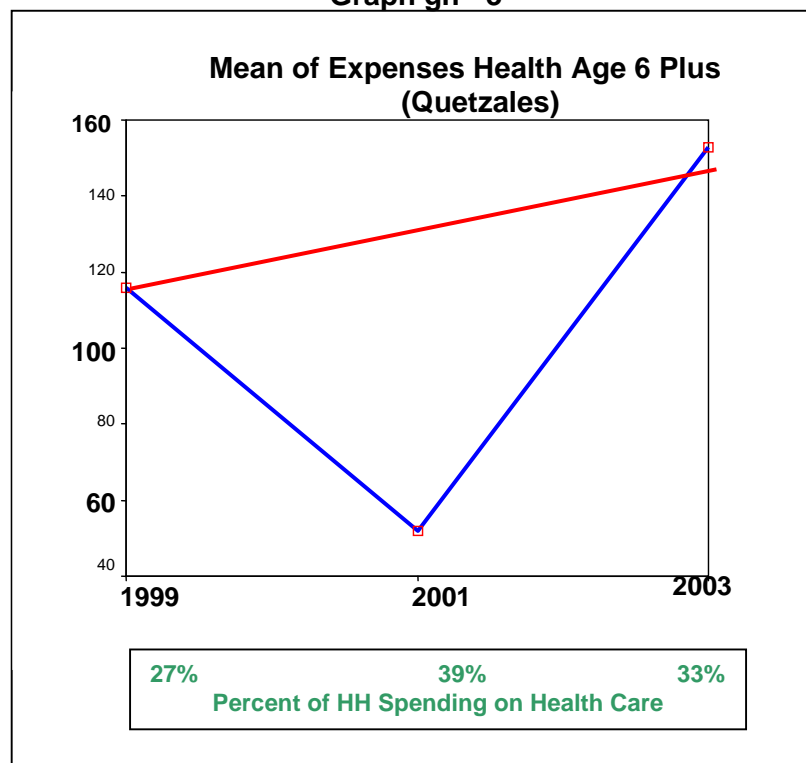


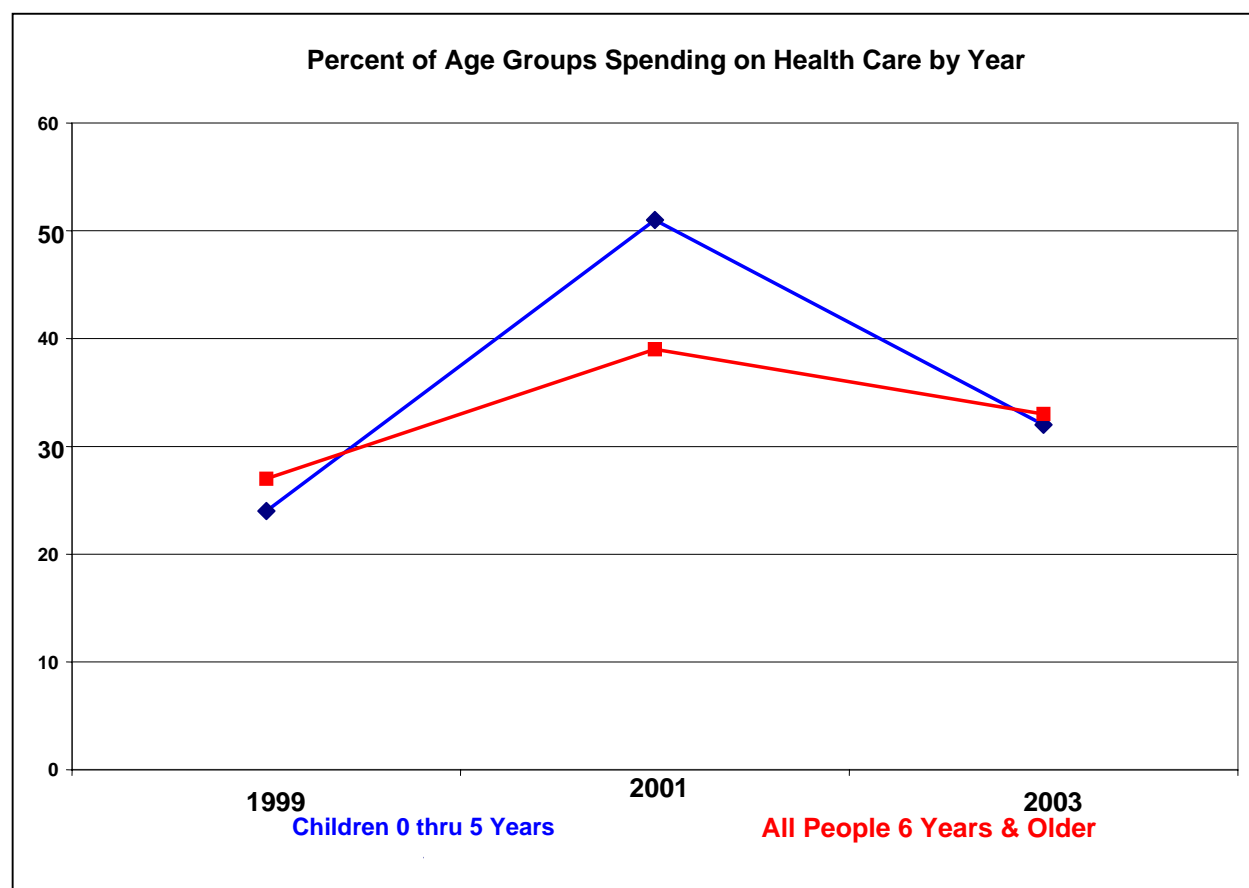
When expenses are separated for children 0 through 5 years and for those 6 years and older, the same basic pattern is followed but with a much sharper and higher increase in expenditures for those age 6 and above as shown in graphs gh 2 and gh3 below.

Graph gh - 2



Graph gh - 3





The above chart of percentage of people spending for health care services does not necessarily refute the concept of rational spending decisions based on price and allocation among household members vis a vis older and younger (generally more vulnerable) members -- recall that in gh-1, inflation against expenses was not that significant by the CI (about Q95 vs. Q110).

On the other hand, the data do reinforce the argument that when costs become very high (Q95 or Q110 vs. Q190 as in graph gh-1), then there is a significant decrease in the utilization of this consumption bundle, i.e. health care and services, regardless of risk and vulnerability.<sup>16</sup>

### 3. Education

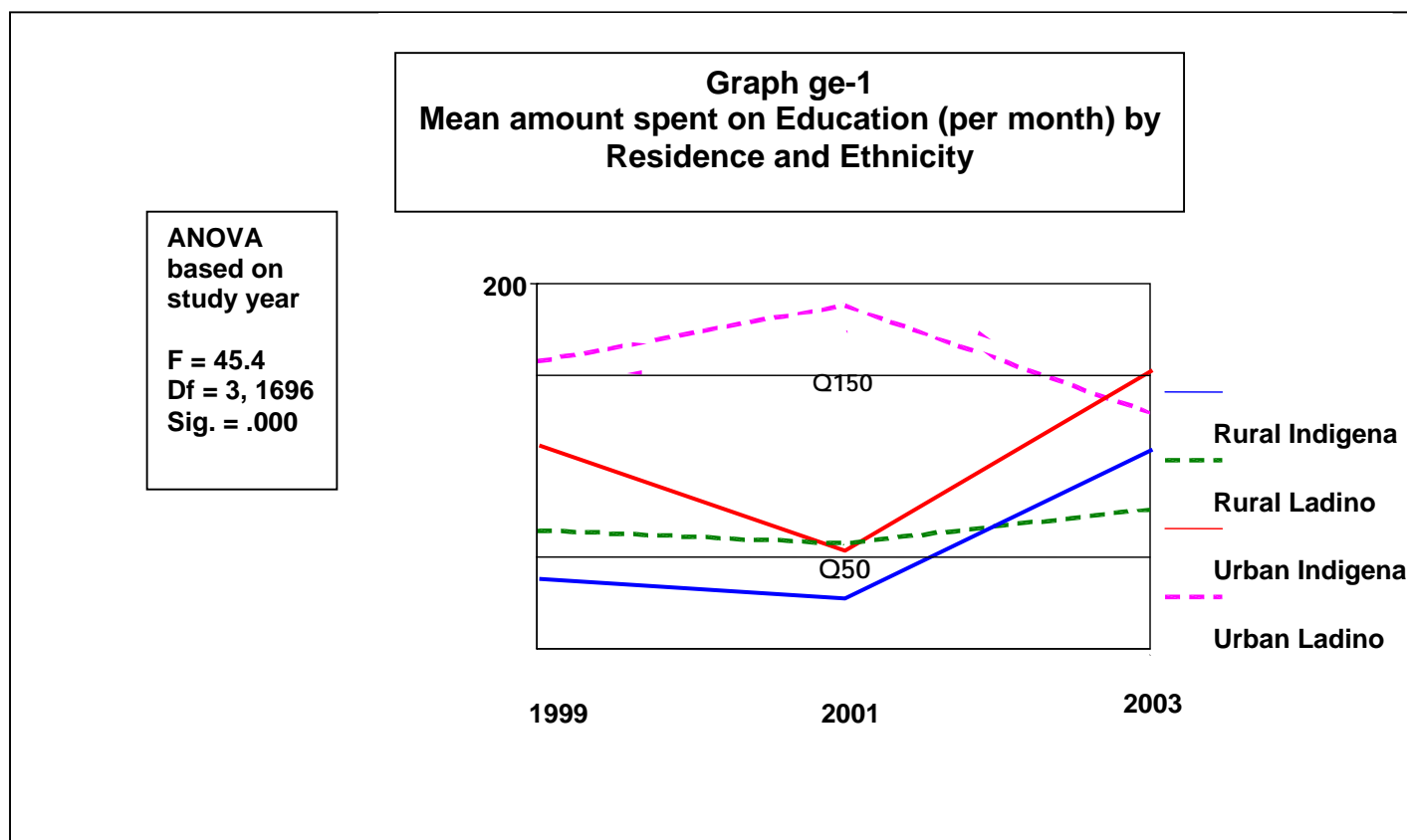
The previous two consumption bundles, food and health, are basically universal. Education is less so, and is economically relevant only to households that have children of school age. While education is mandatory in Guatemala, the public education system often does not effectively reach many outlying and relatively isolated areas. Even in areas where infrastructure and teachers are available, some households opt not to send children to school, or children themselves sometimes refuse. The reasons for this are economic, cultural, and often linguistic.

<sup>16</sup> Breakdowns by sex and by kind of treatment received are not available at the present; nor are data available about the source of health care received, e.g. MOH, IGSS, Private, and NGO, although we can make a broad assumption that for the rural groups and urban ladinos, the majority of their sources are probably MOH and NGOs.

The details of the causes of non-enrollment and attendance are complicated and beyond the scope of this report. It is worth noting, nevertheless, that USAID has made substantial investments in bi-lingual education in the Department of Quiché.

Those households who do send their children to school – at varying degrees of expenditure – can be said to place a reasonably high value on the future benefits to their children (and perhaps delayed benefits to themselves). Economically speaking, and especially in rural areas, they are taking a risk of foregoing short-term benefits such as ‘free’ farm labor, for longer term gains for their children and themselves.

In these terms the following graph (ge – 1) is suggestive of possible significant shift in the degree of commitment to education on the part of the mayan populations, both urban and rural.



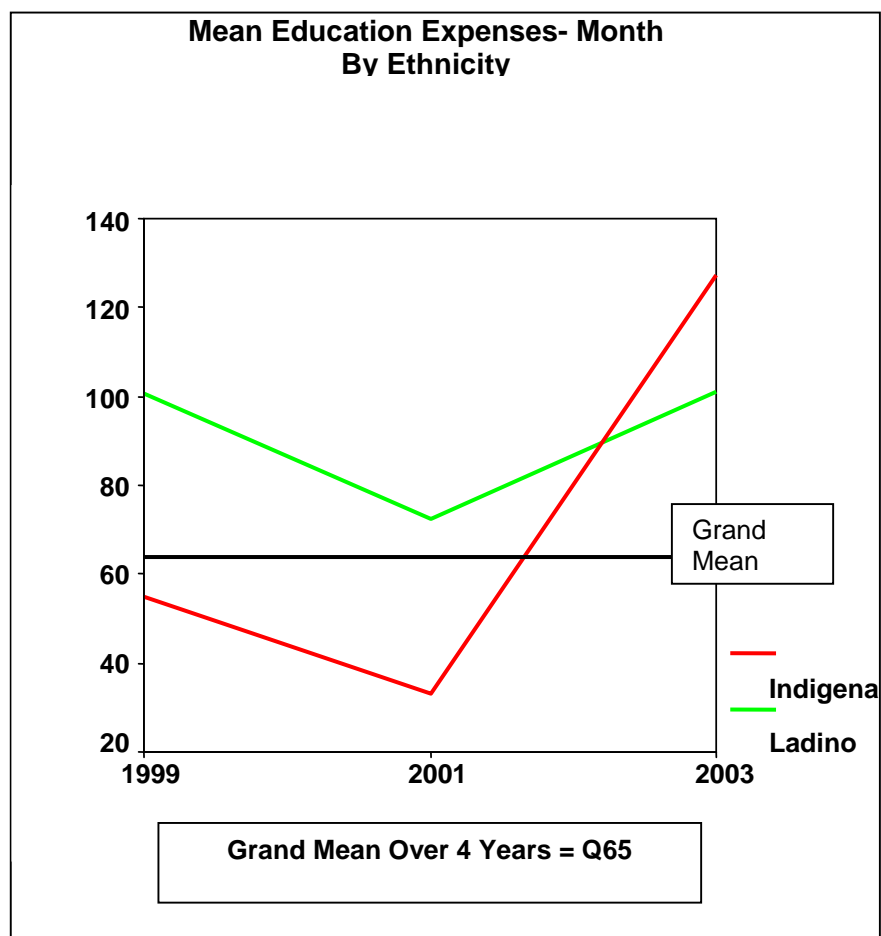
The amount spent on education shows a significant overall increase except in the case of urban ladinos<sup>17</sup>, where a decrease from both 1999 and 2001 is notable. Both mayan groups had significant increases in education expenditures over the 4-year study period, even considering the decrease in 2001 which may be explained by sampling differences.

<sup>17</sup> As indicated in the Methodology section, the second data point (EBF-2) probably underestimated the totals for all ethnic and residential groups because it sampled more heavily on rural areas (Santa Cruz Quiché, for example, was omitted as were Chimaltenango communities of San Martín and San José Poaquil).

Whatever the cause, it seems clear that the mayan populations in this study are making a high economic investment in education even in an increasingly difficult economic environment.

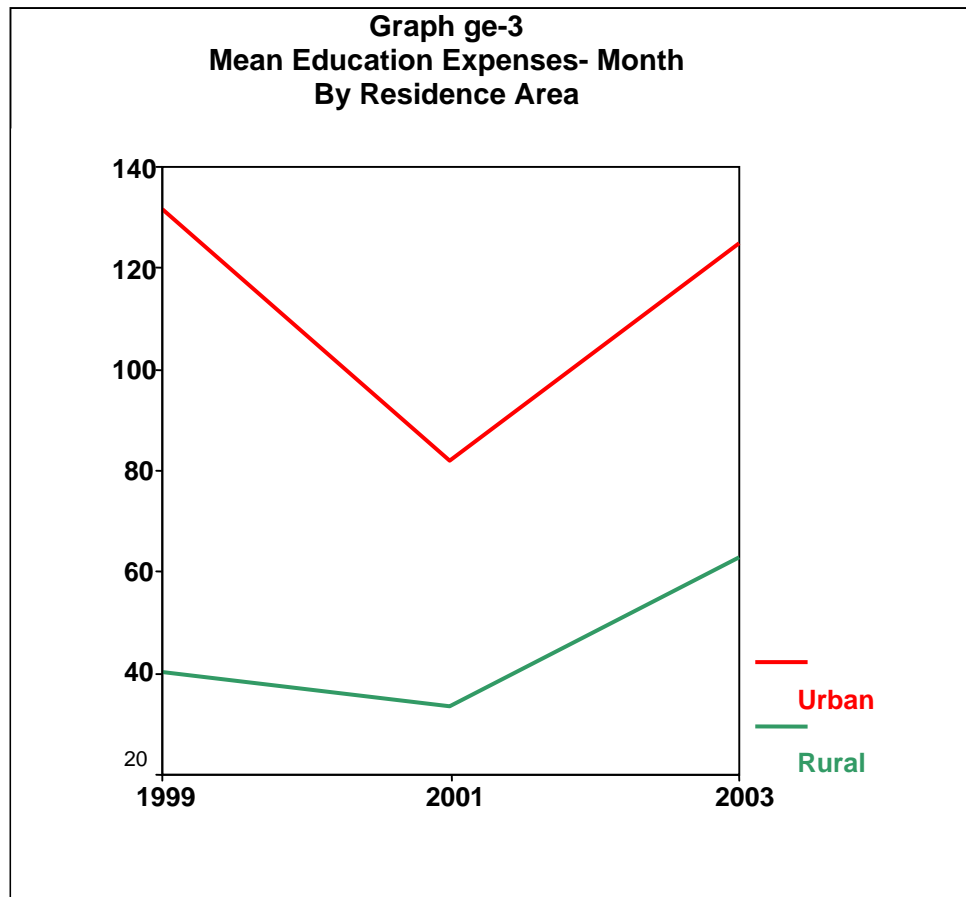
Physical access to educational infrastructure does not seem to be a defining issue in this sample or we would expect rural ladino and maya populations to benefit or suffer similarly due to lack of facilities and teachers. On the contrary, however, we find mayans spending more than ladinos on education in similar environments.

This is confirmed by the following graph which traces the mean amount spent over the four years by ethnicity. It is clear that mayans have begun to outspend their ladino counterparts by significant amounts since 1999.



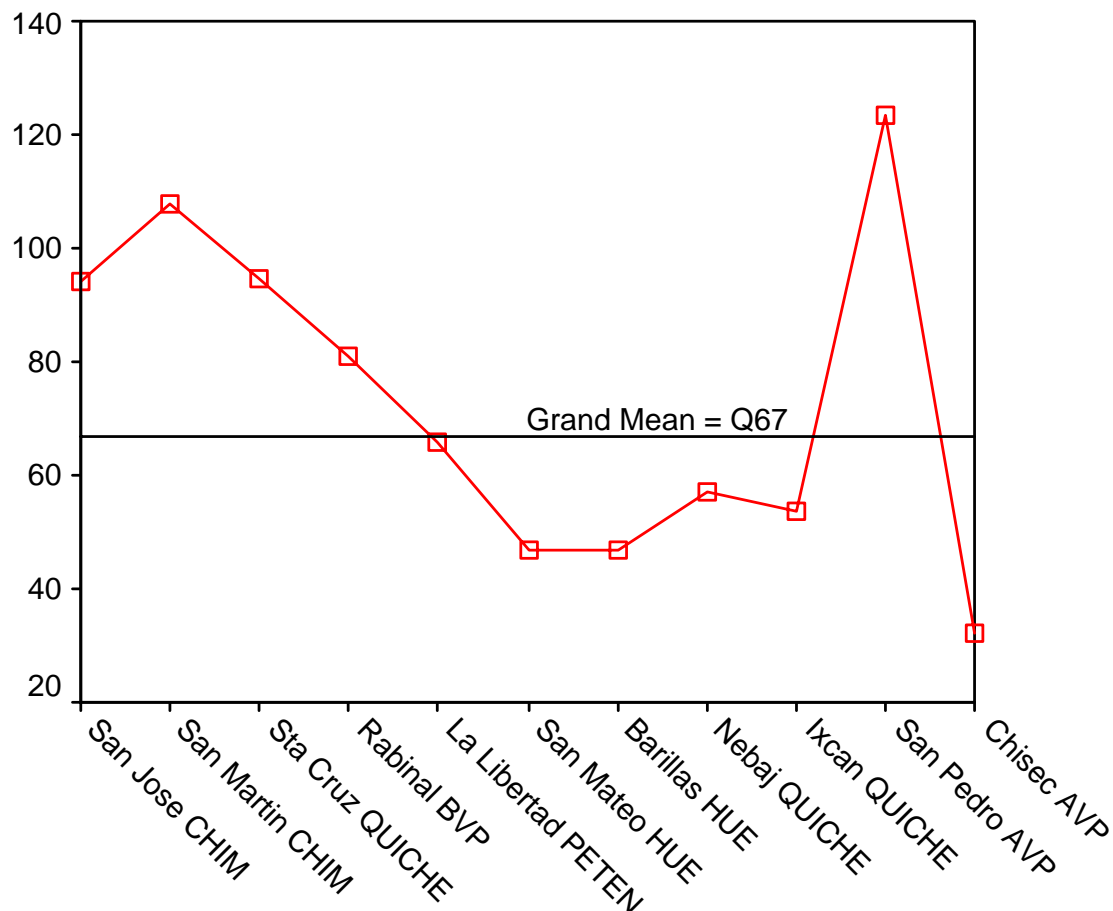
On the other hand, when *residence area alone* is considered, urban dwellers consistently spend more per month on education resources than do rural households as is clear in the following graph (ge-3)



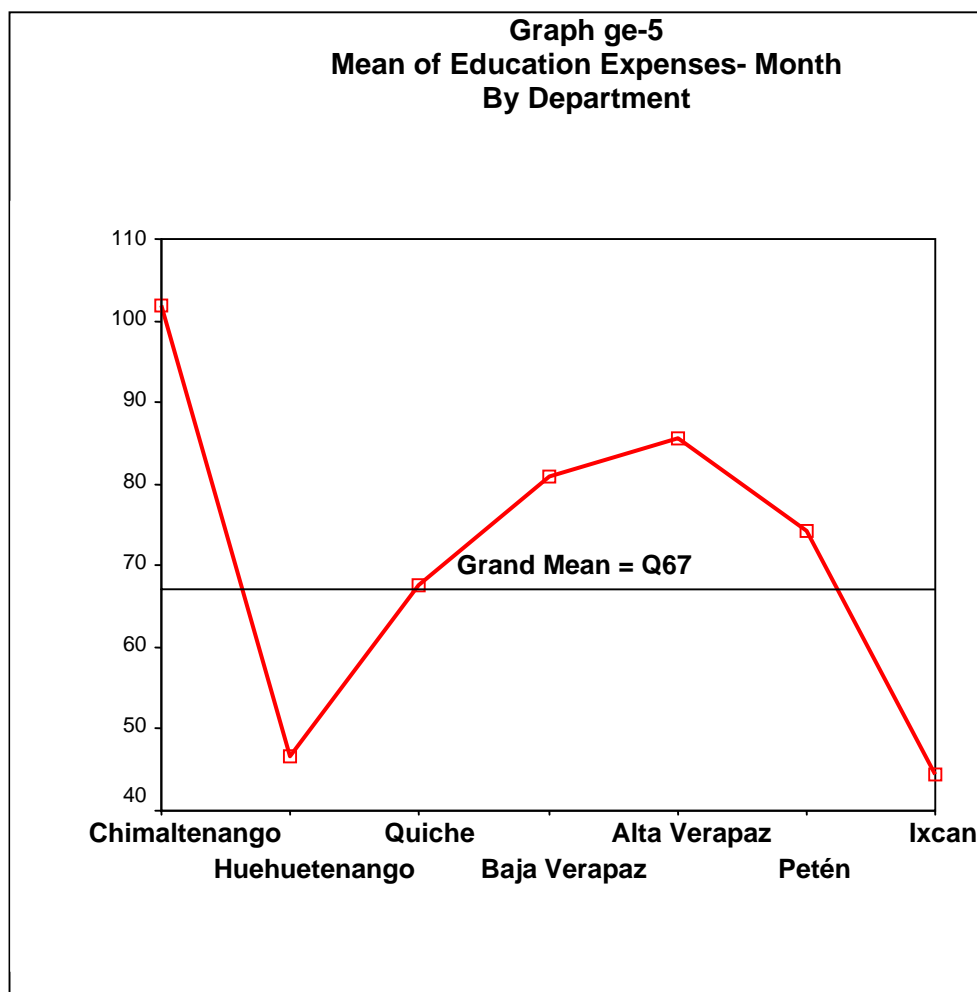


Graphs ge 4 and 5 on the following pages summarize educational expenses by Departments and Municipios respectively.

**Graph ge-4**  
**Means of Educational Expenses per Month**  
**By Municipios**



The extremes shown for San Pedro Carchá and Chisec in Alta Verapaz are difficult to explain. The t-Test value is 8.6 with 222 degrees of freedom and significant at less than .001. This is a consistent pattern for all monthly expense variables. In addition, there is no significant difference in the mean of salaries and wages between the two municipios ( $t = -.274$ ). There is a significant difference between the two in "other annual income", but it is the favor of Chisec (Q3195 vs. Q1756). Examination of the raw data shows that while the differences (ANOVA  $F=19$ ), there are few urban-ladino cases in the Chisec sample than the San Pedro Carchá sample. *Consequently, the best explanation appears to be that the ladino urban sample is under-represented for Chisec.*



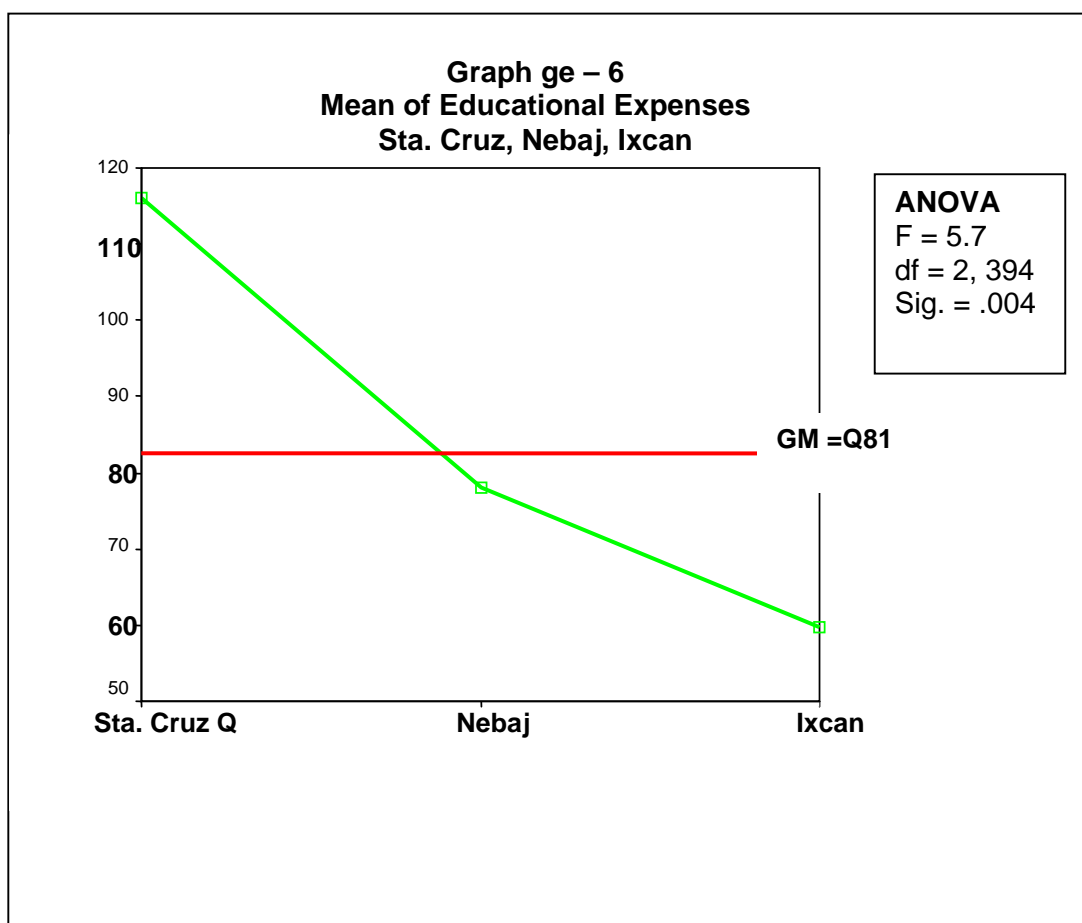
The differences between Quiché and Ixcán (which is not properly a Department) are discussed below.

Quiche, because it received substantial input to bi-lingual from USAID over the past few years merits a separate discussion. The heterogeneity of the EBF sample is significant ranging from the highly urbanized Santa Cruz to the relatively rural Nebaj with a nuclear urban center with difficult access to its aldeas and smaller communities to Ixcán which represents a highly diversified population connected by relatively decent roads and a majority of “new” communities. Santa Cruz and Nebaj are located in a mountainous environment whereas Ixcán occupies a hot, tropical environment. Access to Ixcán is easier through the Petén or by small plane, whereas access to Santa Cruz and Nebaj are traditionally reached by road via the Pan American highway. Additionally, Ixcán (Playa Grande) was until recently basically inaccessible directly from Santa Cruz-Nebaj during the rainy season. Santa Cruz and Nebaj remain essentially culturally homogeneous, whereas Ixcán is highly heterogeneous by virtually all measures and is mainly populated now by refugees who have returned from self-imposed exile in Mexico and the Mexican peso is occasionally used as a means of exchange in the markets. The Ministry of Health, MSPAS, has defined Ixcán as a separate administrative unit.

Because of these and other economic factors, this report often treats Ixcán at the same level of analysis as a formal Department. Nevertheless, Ixcán remains politically and administratively part of the Department of Quiché, and is treated as such by the Ministry of Education.

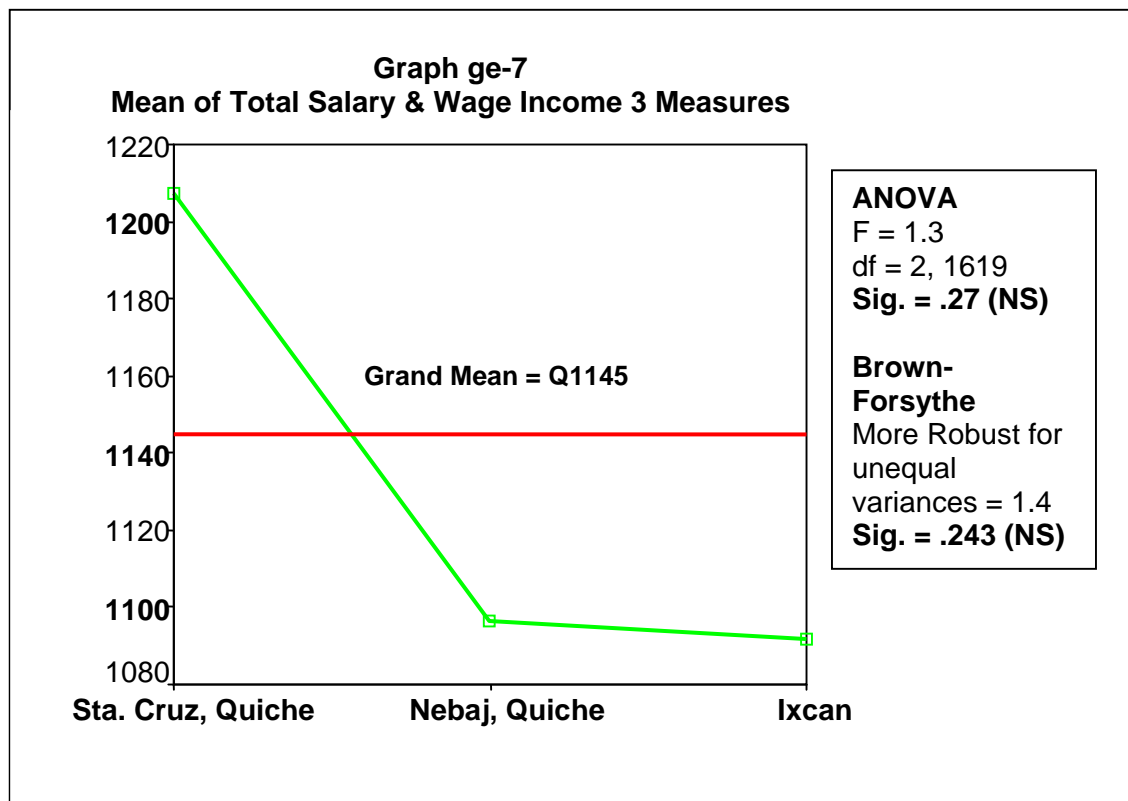
The following data and charts treat Santa Cruz, Nebaj and Ixcán as municipios of the larger Department of Quiché and make the assumption that Ministry of Education policies along with USAID inputs are similar, if not in quantity, at least in intent.

Graph ge-6 shows the mean of the overall expenditures on education over the three measurement points by each of the three municipios.

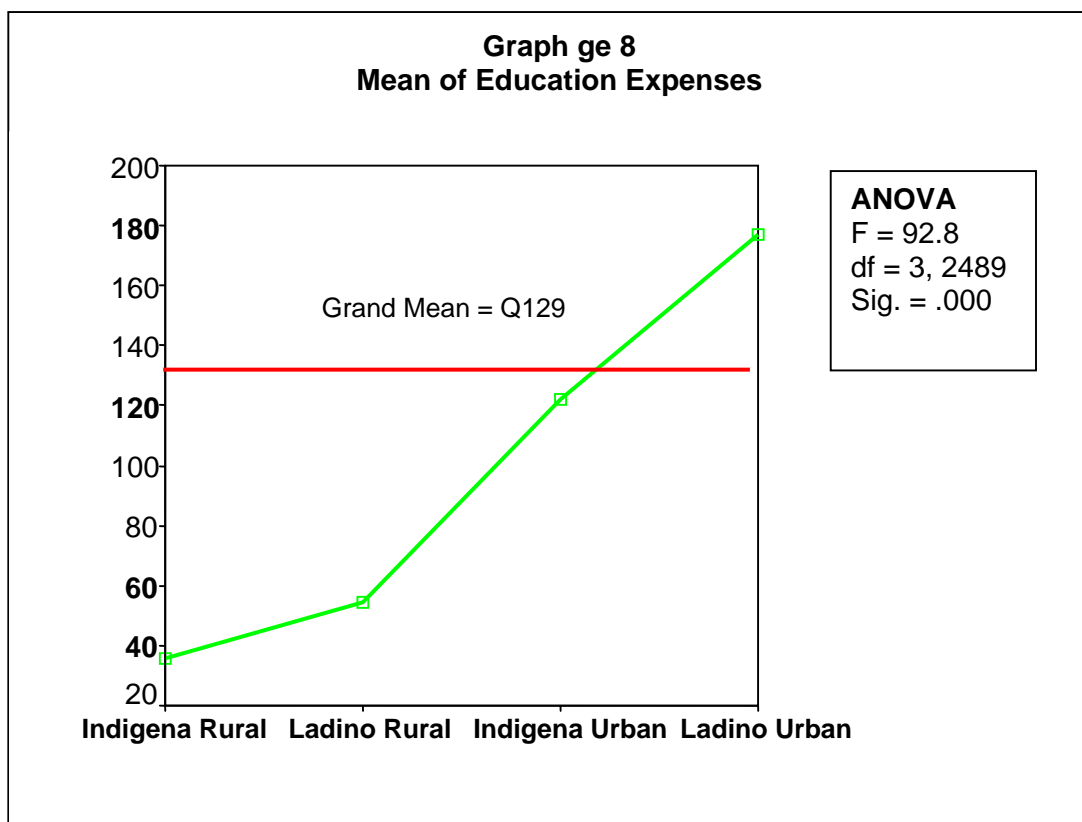


This parallels almost exactly the findings on salary and wages for the same 3 municipios over the three points in time as seen in the following graph (ge-7) on the next page. In fact, it could be argued that about 10% of the household income goes to support education in all three municipios.

Nevertheless, while the graphs are visually parallel, there is no statistically significant difference among the three municipios with respect to monthly salary and wage income.



However, when the same population with respect to ethnic and residential composition, a clearer picture emerges as in graph ge-8.



As can be seen from the Waller-Duncan classification, there are very clear differences in the amounts contributed to educational expenses based on residence and ethnic differences.

**Urban residents, regardless of ethnicity, spent more than twice** the amount on educational investments for their children than do rural residents in these three municipios over the four year measurement period.

Education Expenses					
Waller-Duncan <sup>a, b, c</sup>					
Ethnicity & Residence	N	Subset for alpha = .05			
		1	2	3	4
Indigena Rural	1560	35.5048			
Ladino Rural	288		54.3125		
Indigena Urban	489			122.0706	
Ladino Urban	153				177.0490

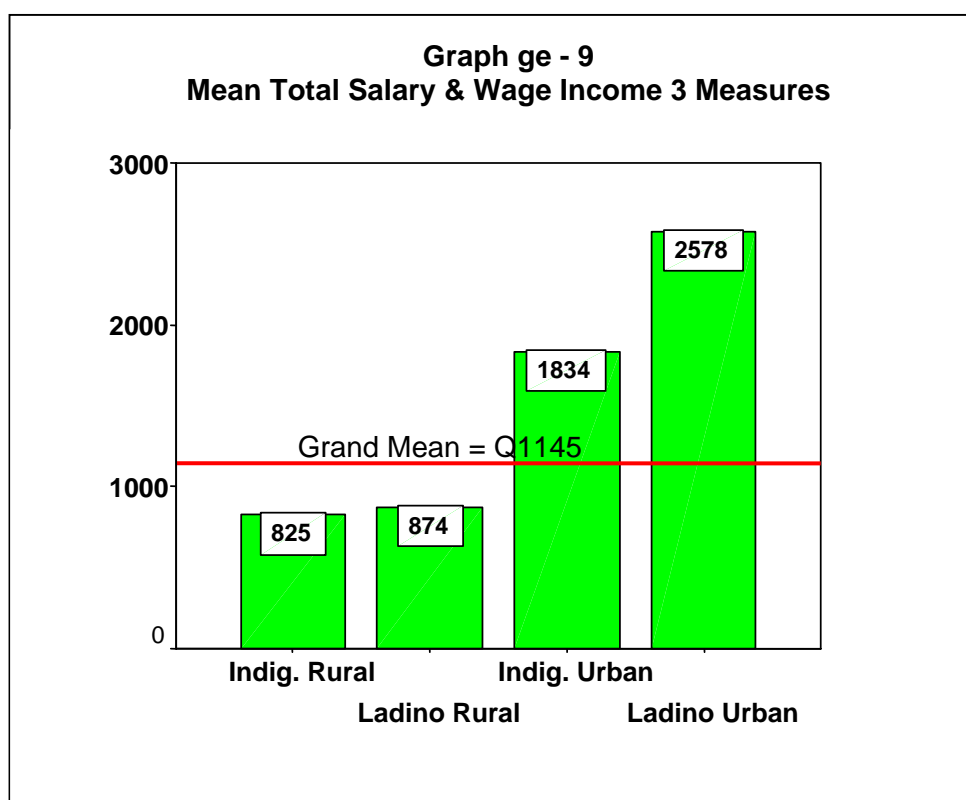
Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 315.105.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Type 1/Type 2 Error Seriousness Ratio = 100.

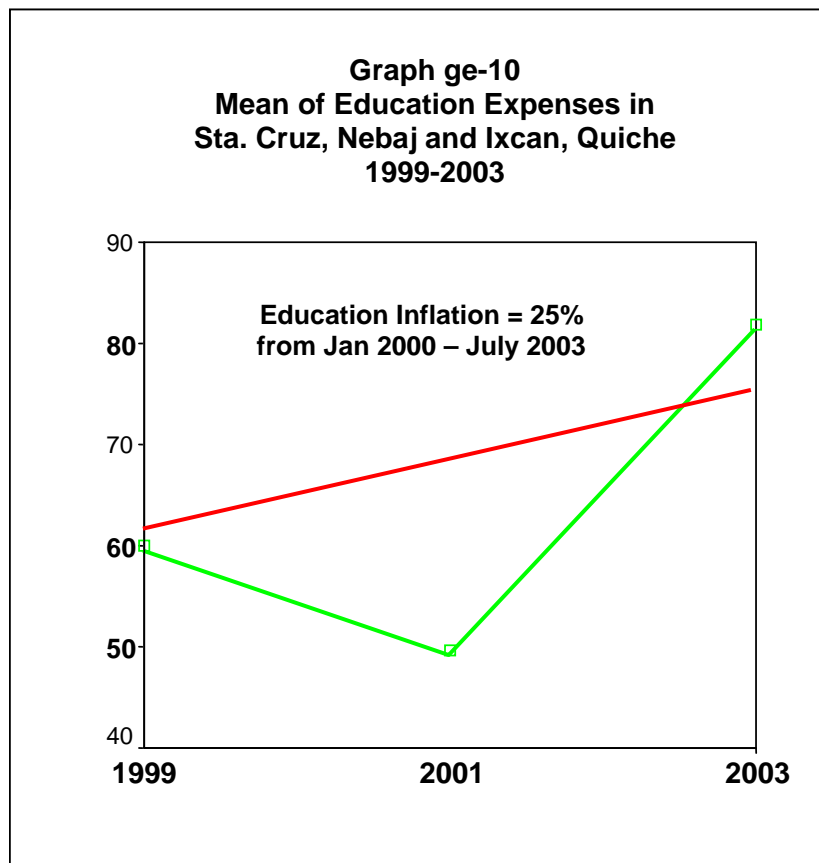
This is reflected in the division of income means by ethnic and residence as well, as shown in the graph below.



Has there been a difference in the gross amount of educational expenditures over time in these three municipios? The answer is clearly “yes” as is illustrated in the following graph. In general, residents of these three municipios are paying more – on the average – than the rate of the CI of 25%<sup>18</sup>.

<sup>18</sup> Inflation for Region VII which includes both Huehuetenango and Quiche is only measured in Huehuetenango which reflects a CI of 116; here I have used the national average of 125. If the true inflation for Quiche is really closer to 116, then residents are paying much more than the inflated rate for educational services.

There has been a net increase of about 27% spent on education in these three municipalities over the period 1999 – 2003. This has been about 2% greater than the inflation in education as presented in the CI.



Consequently, while the population has “kept up” with inflation in education, it has not significantly invested more over the 4 year period in the Department of Quiché. The “dip” in 2001 is explained by the omission of Santa Cruz in the 2001 data collection survey (EBF-2).

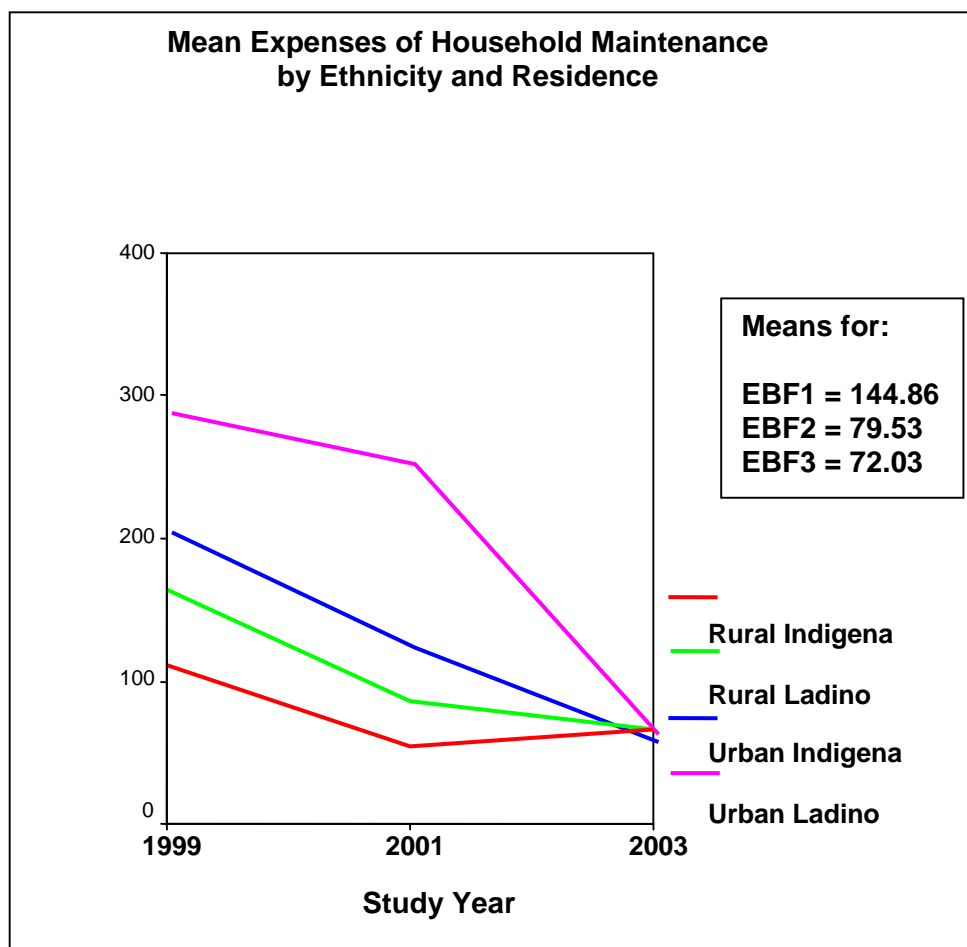
#### **4. Housing Maintenance**

The housing maintenance consumer bundle consists of the costs of all standard housing maintenance functions: water, electricity, sewage, trash removal, minor repairs, painting, house ware and consumables. It does not include major repairs such as roofing or addition of rooms, remodeling, etc.

In this set of data housing maintenance expenses show an extremely high degree of flexibility with respect to household resource allocations. At first glance, the following graph begs credibility. How is it possible that all four groups spent about the same – between Q66 and Q68 – for household maintenance? This variable includes utilities costs, repairs and maintenance



and other related minor costs. It does not include major repairs or construction.<sup>19</sup> Each data set was reviewed and recalculated and reconfirmed.

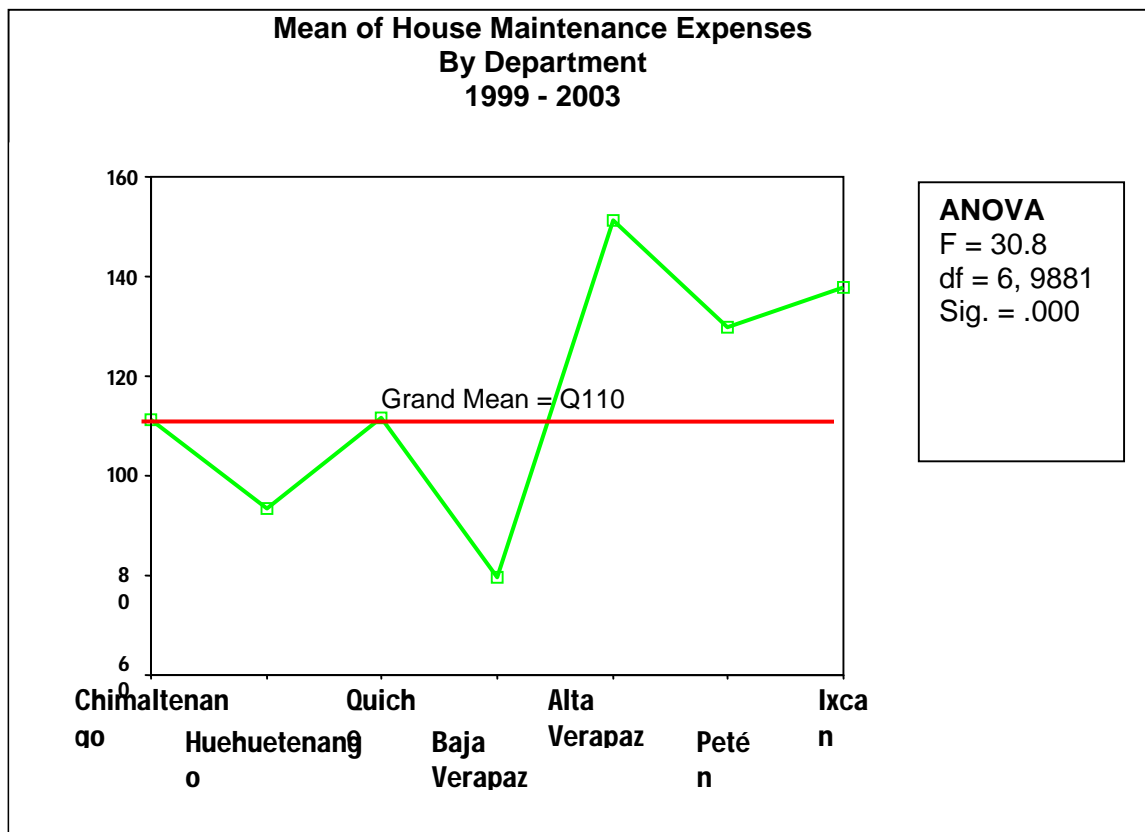


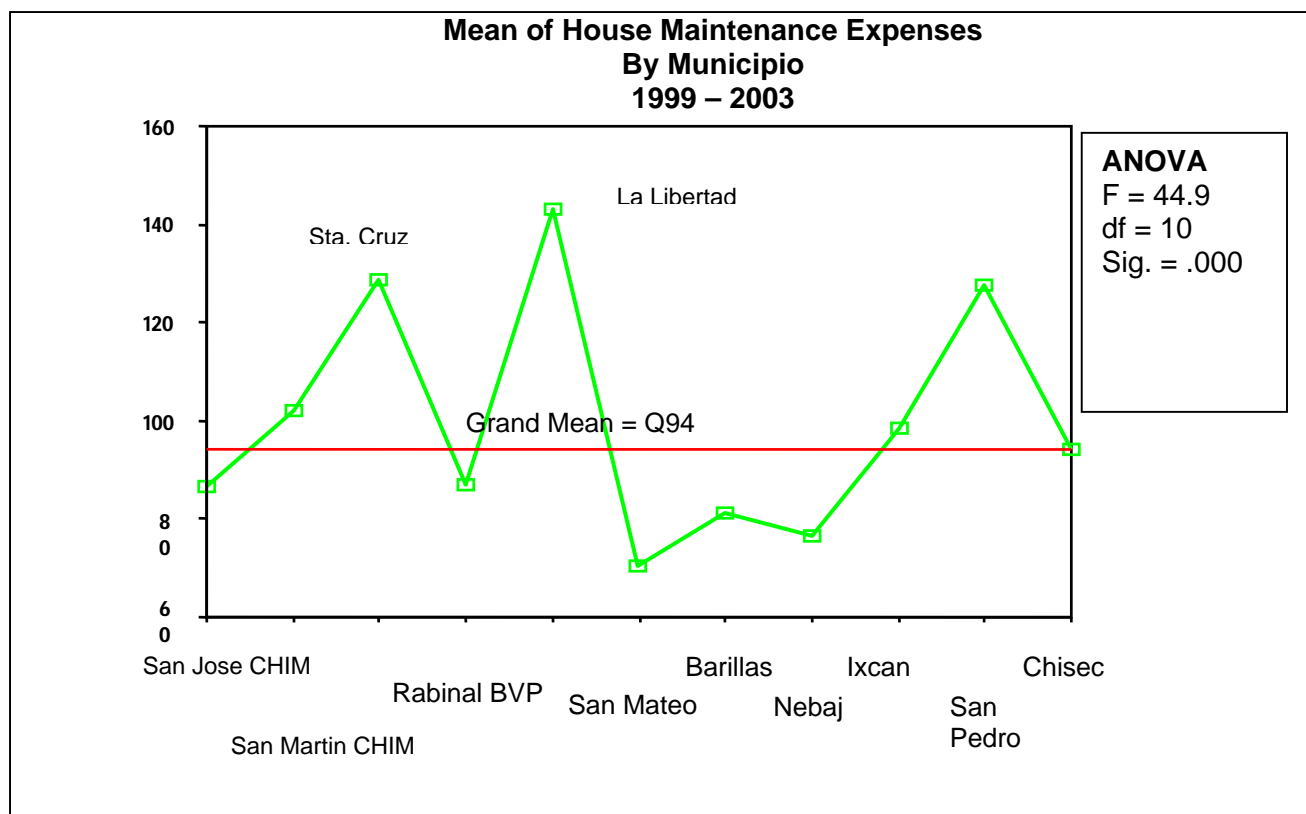
The trends in the above graph are inversely related to the inflation rate of 19.1% (July 2003, indexed to January 2000). The fact that the quetzal figures are nearly identical for each of the four groups could be dismissed as sampling distortions were it not for the fact that the lowest group (rural mayans) increased their household spending slightly from 2001. Additionally there are no other variables with systematic bias in the sample. Other variations in the descriptive statistics show that the standard deviations vary from 61 to 68, and the medians vary from 45 to 68, in sharp contrast to the same statistics from 1999. Thus we can discount sampling and methodology as explanations from the observed phenomenon.

The main explanation and the most feasible is that income is not keeping up with either measured or “hidden” inflation, even in the “richest” cohort of the study – urban ladinos. Consequently, it seems most likely that people are reducing their spending on non-essentials, postponing all but the most important elements of household maintenance.

The following graphs reflect the variability between departments and municipios, but note that their grand means (Q110 and Q94) are below the 1991 mean of Q144.

<sup>19</sup> The Instruction Manuals for all three study periods contain the identical wording.





Consequently, it seems most likely that people are reducing their spending on non-essentials, postponing all but the most important elements of household maintenance.

In contrast to the findings on healthcare expenses, household maintenance expenses<sup>20</sup> can be placed “on-hold” more or less indefinitely and are rarely “fatal” or incapacitating as are some serious illnesses.

<sup>20</sup> Test Data from Household Maintenance Expenses

#### Gastos de la Vivienda y Servicios de Conservación

Waller-Duncan<sup>a,b,c</sup>

Study Sequence	N	Subset for alpha = .05	
		1	2
3	2885	72.0340	
2	625	79.5328	
1	2052		144.8683

Means for groups in homogeneous subsets are displayed.

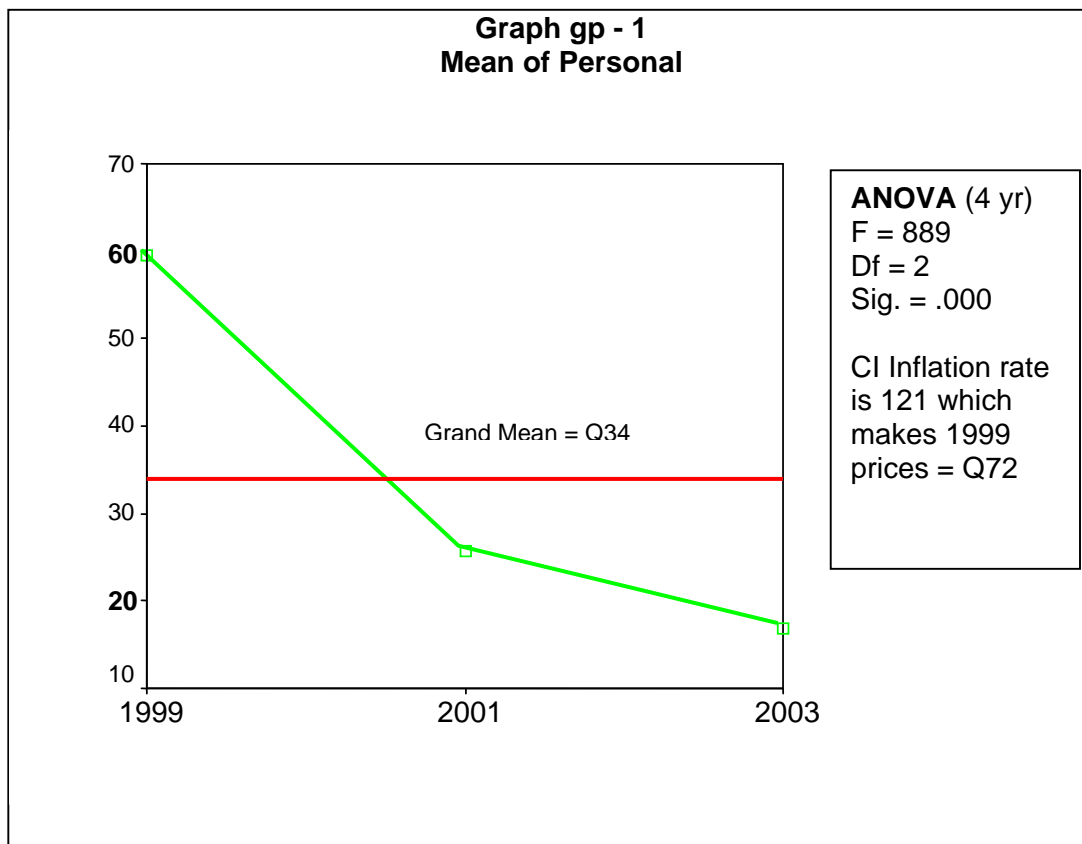
- a. Uses Harmonic Mean Sample Size = 1232.564.
- b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.
- c. Type 1/Type 2 Error Seriousness Ratio = 100.

The data thus suggest a series of rational spending decisions based on an evaluation of valued expenses, and that one of the most flexible expense is household maintenance where there is no apparent substitution, rather a prolonged postponement or reduction of expenditures in this consumption bundle.

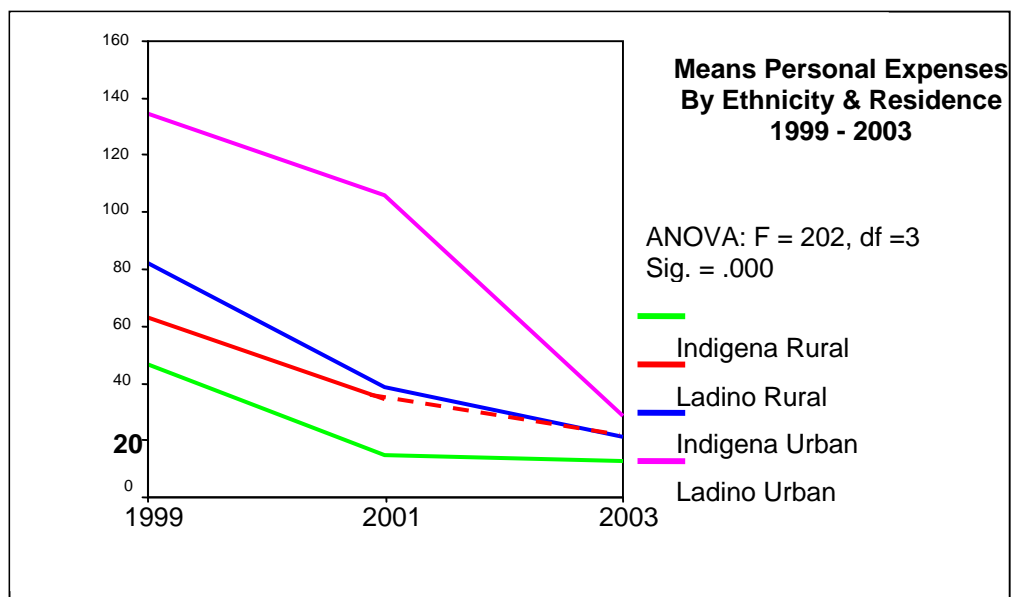
### ***5. Personal Expenses***

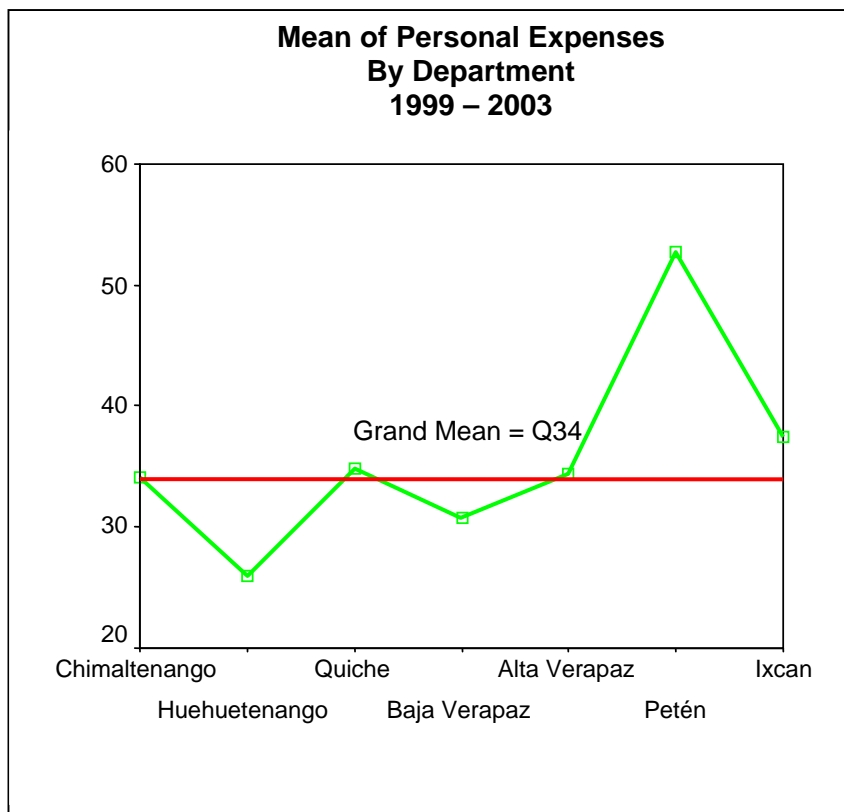
The personal expenses consumption bundle consists of a variety of personal items including cosmetics, personal hygiene products, barber and beauty salon costs, and an assortment of “everyday” items that have limited durability either through use or loss. It does not include liquor or tobacco. Presumably, except for some very basic items, this is probably the most flexible of all the consumption bundles, and we should see a significant reduction in expenditures for these items in order to meet more essential costs such as food, health services and education.

From the following ANOVA analysis (Graph gp – 1), it is clear that the sampled households have reduced their spending on personal items dramatically – by over 2/3 in the period from 1999 to 2003. The Consumer Index for July 2003 is 121.45 for “Bienes y Servicios Diversos”

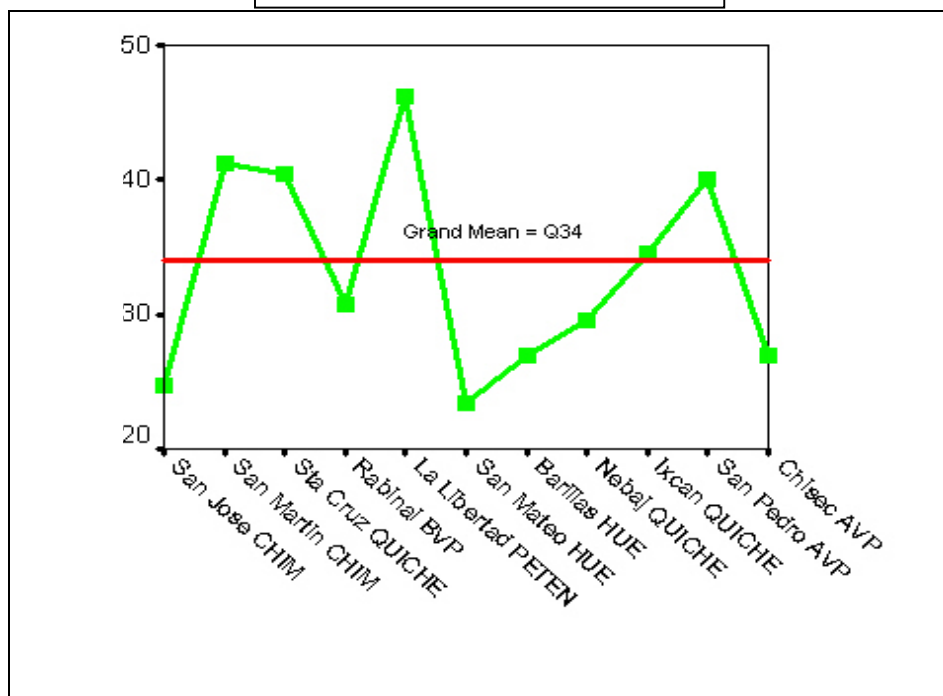


This reduction is shared by all residence and ethnic groups as is seen in the following graph.





**Means of Personal Expenses  
By Municipio (1999 – 2003)**

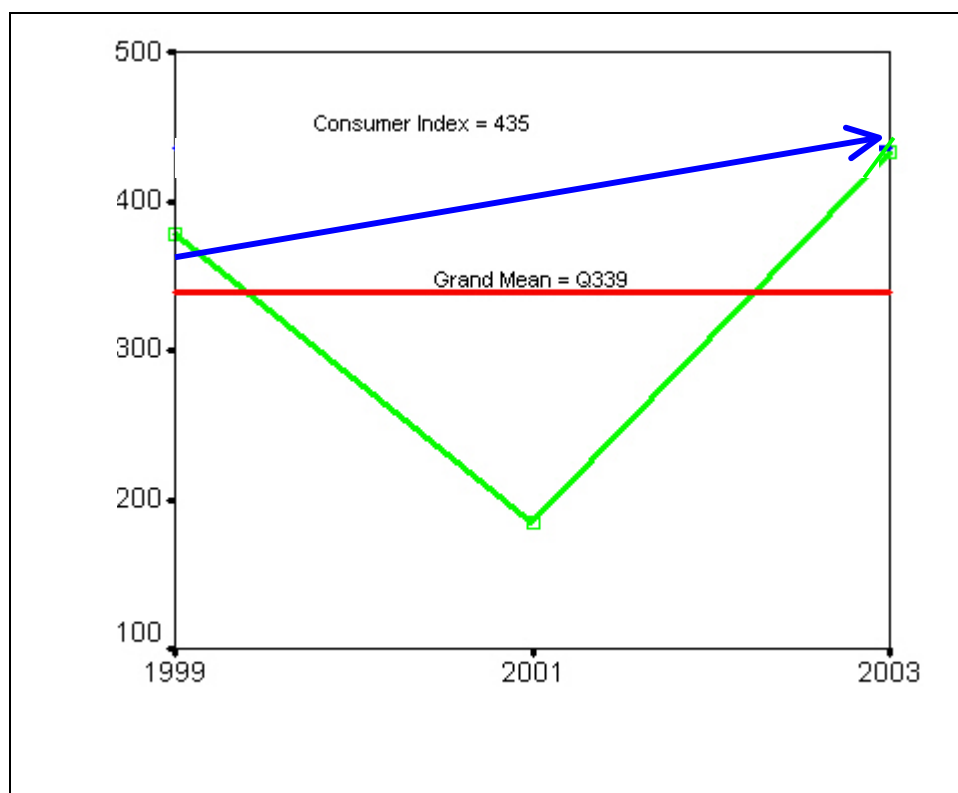


The main conclusion based on these graphs is that the purchase of items of a personal or individual nature, respond fairly dramatically to constrained household budgets. This is true for expenses for household maintenance.

## 6. Clothing

Clothing purchases are measured on a quarterly basis the poorer populations rarely purchase clothing regularly. This consumer bundle, which includes clothing and shoes for all ages, was initially thought to have considerable flexibility, with people opting to mend older clothes or shoes rather than to purchase new items. The following graph (gr – 1) tends to discount this conception<sup>21</sup>.

**Graph gr – 1**  
**Household Expenditures on Clothing and Shoes**  
**1999 - 2003**

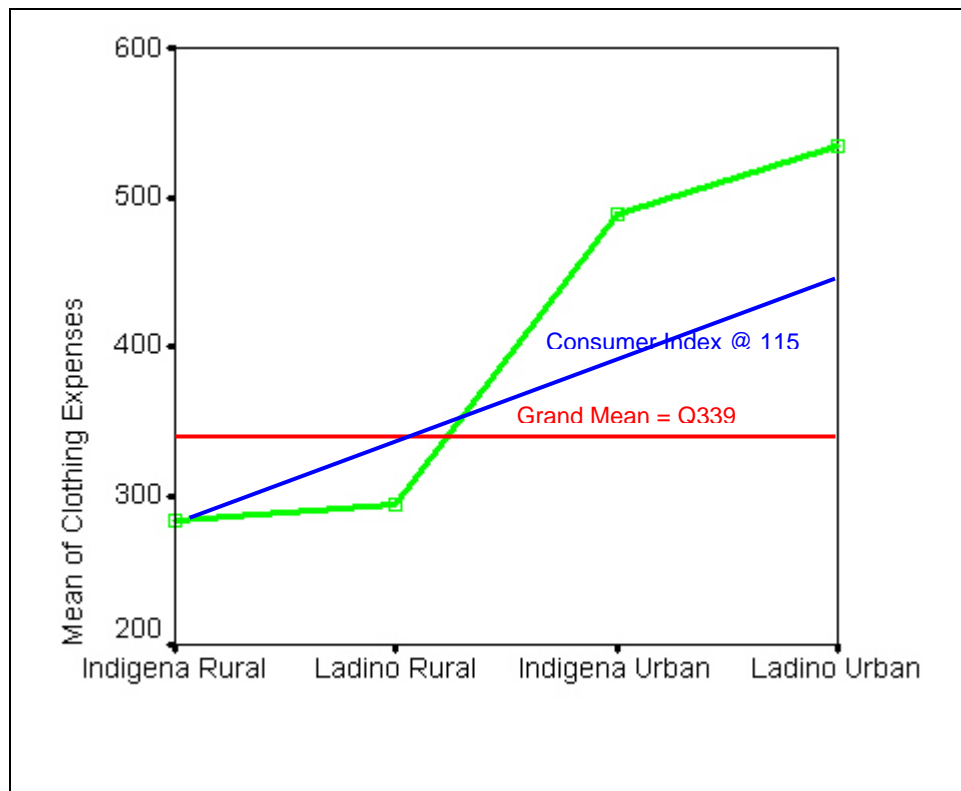


Expenses for clothing for the entire sample reaches the Consumer Index line for clothing (115) exactly. The implication of this is that clothing and shoes are a less flexible bundle of consumption items than the other data might suggest.

However, when we review the data by ethnicity and residence, it is clear that urbanites outspend their rural counterparts regardless of ethnicity by at least by an average of Q200 per month (Graph gr – 2).

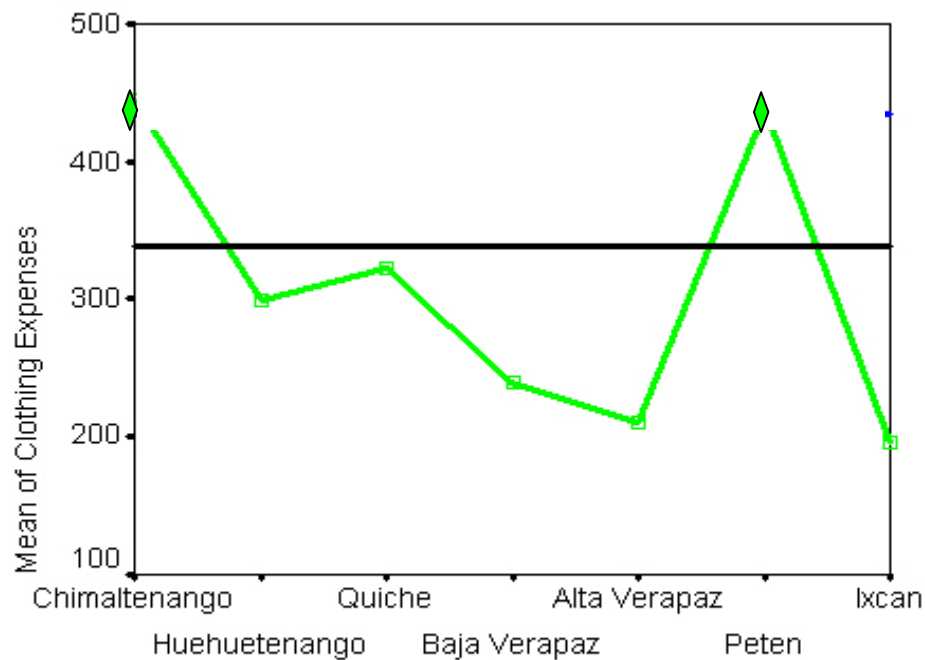
<sup>21</sup> The drop-off in 2001 is most probably due to the sampling frame for that year.

**Graph gr-2**  
**Mean Clothing Expenses by Ethnicity and Residence Area**  
**1999 – 2003**





**Graph gr – 3**  
**Means of Clothing Expenses by Department**  
**1999 – 2003**



This graph suggests that lower income communities spend less on clothing in response to an uncertain economic environment although there is considerable variation. Ixcán has a very low average. There may be exogenous reasons for this: 1) its proximity to the Mexican border; and 2) there are a number of “used clothing” stores in the Playa Grande itself. Further, while indigenous identity is maintained, a majority of males and children wear non-traditional clothing. Female children are rarely seen in *huipiles*, suggesting that their families opt for cheaper western blouses. Shorts are also common among children due to the heat.

## Summary of Income and Expense Analysis

The data and interpretations presented in this section suggest the following conclusions:

1. Wage and Salary Income in this population, while not stagnant in absolute terms, has not matched inflation as measured by the Consumer Index.
2. Artificial wage increases through mandated increase in the minimum daily wage for both agricultural and non-agricultural workers trails inflation.
3. Decisions about consumer spending follow general microeconomic patterns based on utility functions.
4. Decisions regarding allocation of resources for essentials – food, health and education – tend to result in uniform decreases in spending on non-essentials such as personal products and housing maintenance.
5. Expenditures on clothing do not seem to be affected directly.
6. Indigenous populations are increasingly deciding to increase their expenditures in educational support for their children.
7. Evidence suggests, but is not conclusive, that among the poorer segments of a poor population, adults are “postponing” their immediate health care needs while seeing to it that children under age 5 receive more timely treatment. This suggests that the long-term, investment in Child Survival and other Primary Health Care projects and their educational components are having the desired effect in this region.
8. While the overall amount of expenditure on education, especially by the indigenous population has increased, in some communities where enough time has passed to provide a “fair test” of the effects of social investment for example Ixcán and Nebaj, the absolute spending does not compare favorably with that made by the respondents in the urban area of Santa Cruz, Quiché.

FAMILY ECONOMIC WELL-BEING  
In  
THE ZONAPAZ  
Of  
GUATEMALA

PART II

DESCRIPTIVE REPORT EBF-3

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## INTRODUCTION TO PART II

Part I presented overall economic findings of the three EBF (*Estudio de Bienestar Familiar*) studies conducted over the period 1999 – 2003. The methods and methodology of the series is described in Part I, and in the previous two reports. Part II is a presentation of the findings of the third survey and is principally descriptive.<sup>1</sup>

The sample consists of 1225 households randomly selected from the full sample (1999). The complete details of the full sample frame and the selection methods used appear in the initial reports.

This sample includes households from six departments and 11 municipios (Tables 1 and 2). Since they are selected randomly, some represent repeated interviews from the first sample frame, although no attempt has been made to link individual households from 1999 to 2003. One of the primary sampling goals was to more completely represent relatively isolated rural households which are generally under-represented in socio-economic research in Guatemala. As a consequence, with respect to general population parameters, this sample is weighted towards the rural population. The “urban” population here is defined as the limits of the *cabeceras* or administrative seats of the municipios. This study includes *aldeas*, *caserios*, and in some cases populations living on fincas in the municipios of the departments surveyed.

The principal independent descriptive variables throughout this survey are: department; municipio, residence area (urban or rural); and ethnicity (mayan and ladino). As noted in the introduction to Part I, there is no criterion variable (such as a defined social intervention) to evaluate. Standard socio-economic indicators are used throughout the investigations and include estimates of income and expenses; housing and other “living standards” indicators; education; occupations; migration; and indicators of communication, social membership and physical and social access to economic and social institutions.

Because this is essentially a descriptive study, conclusions and interpretations for each section are offered at the end of each section, but no overall conclusions are drawn.

**Table 1**  
**Characteristics of Sample (Individuals in Households) – EBF-3**

Department	# Rural & (Percent)		# Urban & (Percent)		Total & (Percent)	
Chimaltenango	282	(6.5)	173	(12.8)	455	(8.0)
Huehuetenango	1275	(29.2)	187	(13.9)	1462	(25.6)
Quiche (Incl. Ixcán)	2068	(47.4)	631	(46.8)	2699	(47.3)
Baja Verapaz	160	(3.7)	97	(7.2)	257	(4.5)
Alta Verapaz	382	(8.8)	181	(13.4)	563	(9.9)
Petén	197	(4.5)	78	(5.8)	275	(4.8)
<b>Total</b>	<b>4364</b>	<b>(76.4)</b>	<b>1347</b>	<b>(23.6)</b>	<b>5711</b>	<b>(100)</b>

<sup>1</sup> *Because the amount of descriptive data is very large, I have tried to summarize the most relevant into table or graph formats. The bulk of the detailed analyses is contained in electronic appendices in SPSS (spo) format and Word or RTF-WORD accessible files. Paper appendices would be prohibitively large.*

**Table 2**  
**Characteristics of Sample (Households) by Municipios – EBF-3**

<b>Municipio</b>	<b># Rural &amp; (Percent)</b>		<b># Urban &amp; (Percent)</b>		<b>Total &amp; (Percent)</b>	
San José Poaquil, Chim.	23	(2.5)	18	(6.2)	41	(3.4)
San Martín, Jil., Chim	41	(4.5)	20	(6.9)	62	(5.1)
Sta. Cruz, Quiche	177	(19.1)	58	(20.0)	235	(19.3)
Rabinal, Baja Verapaz	42	(4.5)	20	(6.9)	62	(5.1)
San Pedro Carchá	42	(4.5)	21	(6.9)	63	(5.1)
La Libertad, Petén	42	(4.5)	20	(6.9)	62	(5.1)
San Mateo Ixtatán, Hue.	104	(11.2)	20	(6.9)	124	(10.2)
Barillas, Hue.	147	(15.8)	20	(6.9)	167	(13.7)
Nebaj, Quiche	163	(17.6)	52	(17.8)	215	(17.7)
Ixcán, Quiche	104	(11.2)	21	(7.2)	125	(10.3)
Chisec, Alta Verapaz	42	(4.5)	20	(6.9)	62	(5.1)
<b>Total</b>	<b>928</b>	<b>(76.2)</b>	<b>290</b>	<b>(23.8)</b>	<b>1218</b>	<b>(100)<sup>2</sup></b>

The indigenous population accounts for 80% of the households in the sample; 20% ladinos. Ethnicity is self-defined.

### ***Household Characteristics***

Table 3 presents detailed information regarding the composition of these extended households for the full sample.

**Table 3**  
**Main Household Characteristics<sup>3</sup>**

<b>Variables</b>	<b>Mean</b>	<b>Standard Deviation</b>
Age – All House heads	43.8	14.3
Age Male House Head	45.4	14.5
Age Female House Head	41.4	13.7
Educational Level – All	1.7	2.9
Educational Level – Male	2.3	3.2
Educational Level – Female	1.3	2.6
Household Size	6.1	2.5
Children under 6	2.04	.924
HH Members 7 years plus	4.66	2.004
Rooms per Person	.4	.399
Sleeping Rooms per Person	.3	.24
<b>Female Headed Household</b>	<b>13 Percent</b>	
<b>Civil Status House Heads</b>	<b>Percent</b>	
Single	31	
Married	27	
Common-Law	18	
Separated	1	

<sup>2</sup> There are missing data on 7 cases.

<sup>3</sup> All data are self-report. No testing for literacy was done. Language fluency is based on interviewers' observation during the interview, and main informants' assessment of the fluency of the remainder of the household members.

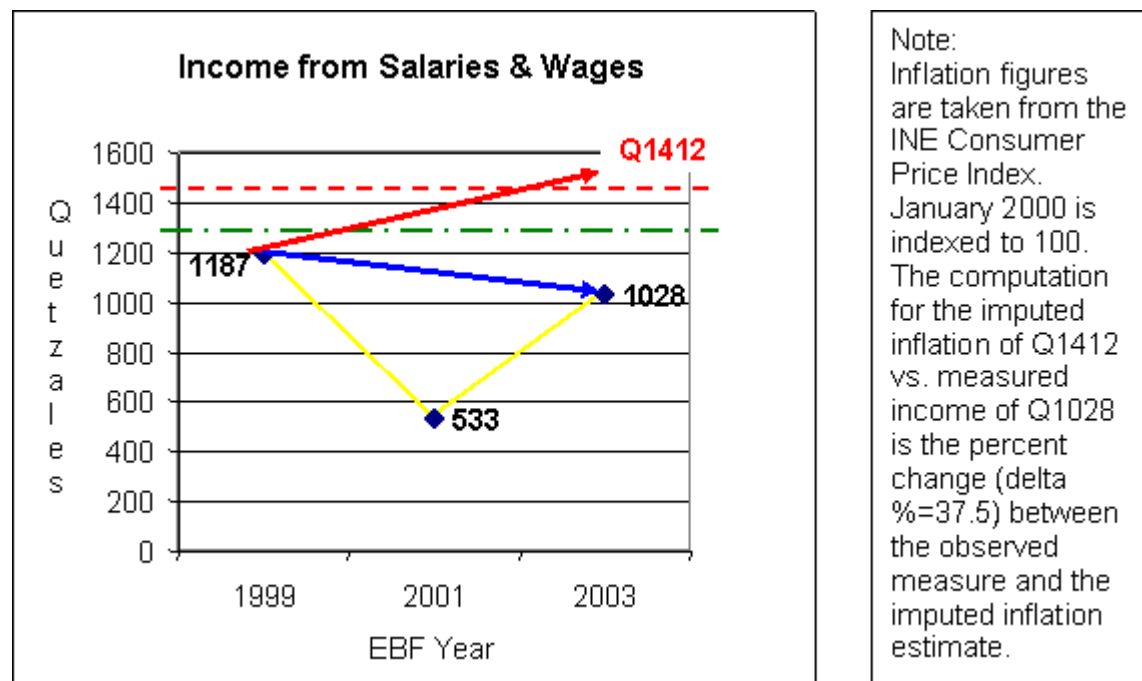
Divorced	0.1	
Widowed	2.8	
<b>Ethnicity House Heads</b>	<b>Percent</b>	
Mayan	80.7	
Ladino	19.2	
<b>Ethnicity &amp; Residence - HH</b>	<b>Percent</b>	
Rural Mayan	64	
Rural Ladino	12	
Urban Mayan	17	
Urban Ladino	8	
<b>Maternal Language - HH</b>	<b>Percent</b>	
Spanish	24.5	
Mayan Languages	75.6	
<b>Spanish Fluency - HH</b>	<b>Percent</b>	
None	22	About 62 percent are not fluent in Spanish.
Some	22	
Regular (So-So)	18	
Fluent	17	
Maternal	22	
<b>Literacy in Spanish - HH</b>	<b>Percent</b>	
No	46	Claim full Literacy
Read Only	6	
Read & Write	51	
<b>Religion - HH</b>	<b>Percent</b>	
Catholic	56	
Evangelism	35	
Mayan Religion	4	
None Proclaimed	6	
Agnostic	.0001	
<b>Educational Level All Members</b>	<b>Percent</b>	
None	41	
Primary (Some or Complete)	50	
Basic	3	
Secondary	7	
University	0.5	

## Household Income

Income estimates from these populations is not usually a very good indicator of true income. Nevertheless, it does capture some portion of the conceptual domain of income and wealth, although it is generally believed to underestimate. In this sample, we have tried to exhaust what seem to be the main recognized variables contributing to income and wealth. The result is that while the absolute numbers may not be as accurate as we would like, the direction and consistency of the findings provide at least a relative low-high understanding of this dimension.

As discussed in Part I of this report, inflation over the four years of measurement is estimated at about 20%, and mandated minimum wage increases have not kept pace with inflationary

pressures on the basic household food basket (INE, July 2003). Additionally, in the rural areas – and at the macro level, these are all “rural” areas, including the larger towns – the mandated minimum wage is rarely paid, especially to agricultural workers. As can be seen from the inflation graph below, a household needs a monthly income of Q1412 to cover their basic monthly needs.



Additionally, income traditionally obtained by migratory farm laborers from coffee, cardamom and sugar harvests, has decreased as the world markets for these have been relatively depressed over the measurement periods (US Department of Agriculture, ANACAFE).

The following graphs show various measures of income (monthly and annual) by each department. The Petén consistently shows the highest level of income along nearly all dimensions, while Huehuetenango and Quiché are consistently low.

I have also separated “salary and wages” from “salary related items”. Data on “salary and wages” consists only of income for labor. Salary-related is defined by a number of other variables that may or may not be paid to workers. These include: overtime; bonuses; travel expenses (*viáticos*); shared earnings (*utilidades*); and indemnities (*indemnizaciones*) for loss of work. Basically all salary-related items only apply to full time employees in the formal market, so it is appropriate to separate these out as separate variables. Table i-1 (following pages) presents the ANOVA Table for all income variables used in this report.



Table I – 1. ANOVA Table for Income Variables

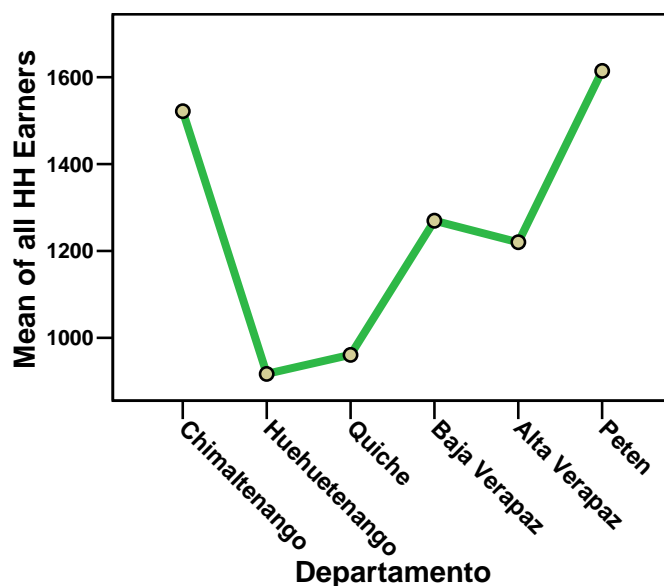
		df	F	Sig.
Total Pension & Remittances - Month	Between Groups	5	21.588	.000
	Within Groups	545		
	Total	550		
Total Rental Income - Month	Between Groups	3	390.361	.000
	Within Groups	419		
	Total	422		
Ag Sales - Annual	Between Groups	5	19.306	.000
	Within Groups	847		
	Total	852		
Land Sales - Annual	Between Groups	2	98.327	.000
	Within Groups	411		
	Total	413		
Animal Sales - Annual	Between Groups	5	39.358	.000
	Within Groups	582		
	Total	587		
Migration Income - Annual	Between Groups	4	8.701	.000
	Within Groups	460		
	Total	464		
Total Annual Income	Between Groups	5	25.132	.000
	Within Groups	953		
	Total	958		
Total Salary of all Members	Between Groups	5	3.725	.002
	Within Groups	877		
	Total	882		
Total Salary Related Inc.	Between Groups	5	54.849	.000
	Within Groups	444		
	Total	449		
Total HH Salary & SRI	Between Groups	5	4.075	.001
	Within Groups	877		
	Total	882		
Total earned in Artesania all Members	Between Groups	3	6.149	.000
	Within Groups	424		
	Total	427		

		df	F	Sig.
Total earned in Agriculture all Members	Between Groups	2	38.746	.000
	Within Groups	413		
	Total	415		
Total HH Enterprise Activities	Between Groups	5	1.002	.415
	Within Groups	980		
	Total	985		
Total HH Income (Salary, SRI & Enterprise)	Between Groups	5	1.235	.291
	Within Groups	1143		
	Total	1148		

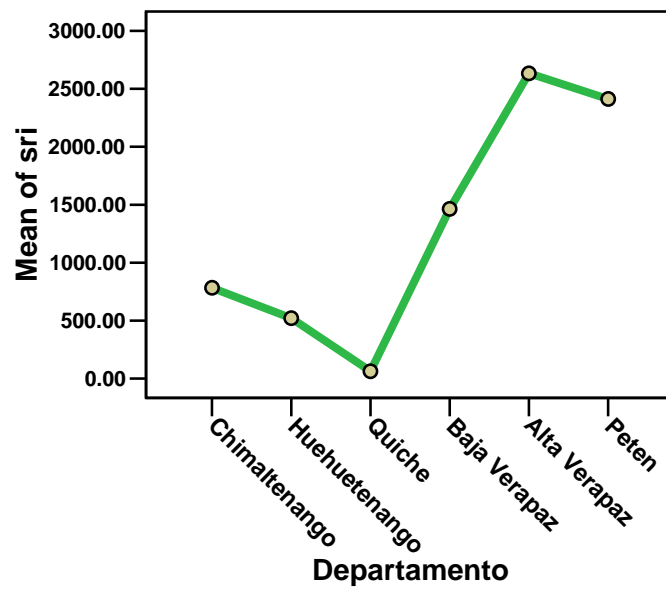
As can be seen, differences in all income variables except “total HH enterprise activities” and “total household income” are statistically significantly distinct by departments.

The following graphs “map” the various income sources by each department. Only in the Petén and Chimaltenango, does monthly income meet or surpass the July 2003 CPI of Q1412 for this population.

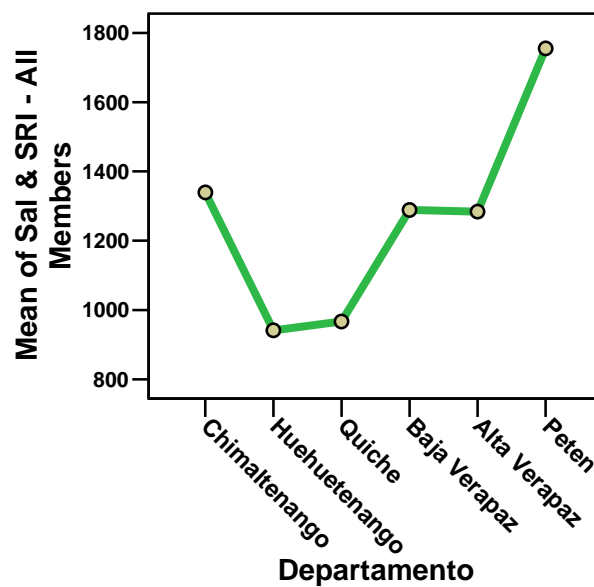
**Income from Salary & Wages**



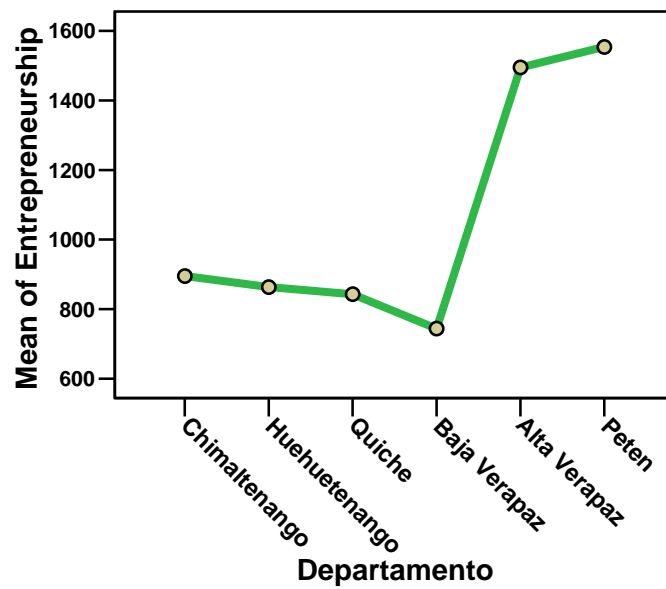
### Income from Salary Related Items



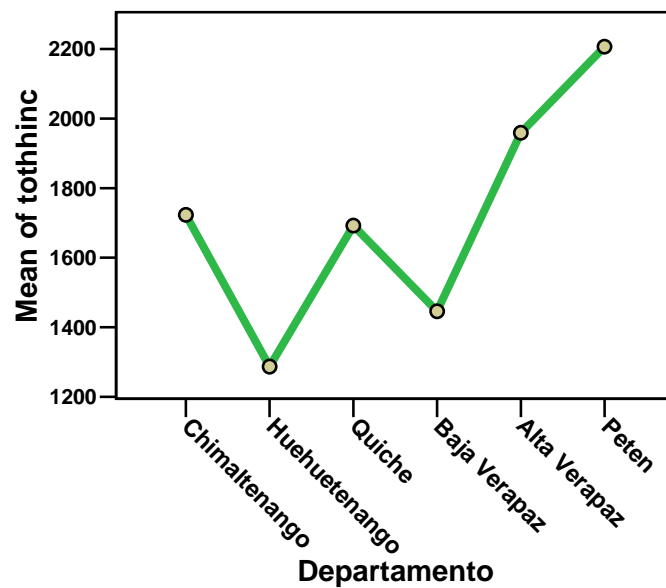
### Income from Salary & Salary Related Total



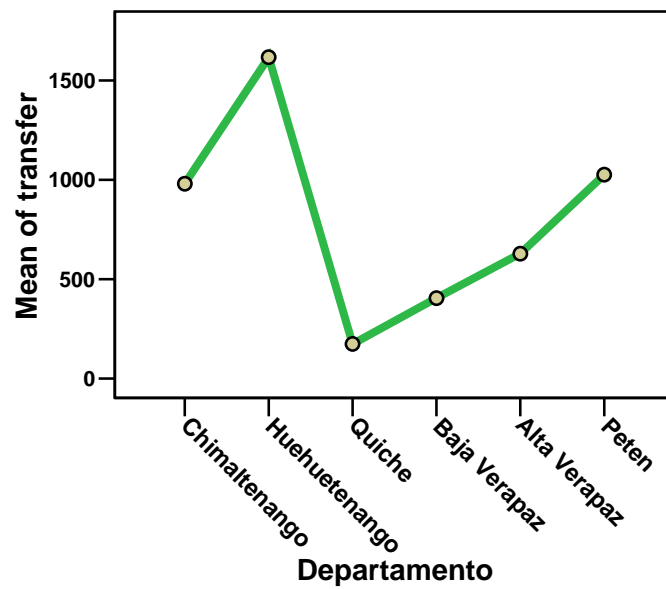
### Monthly Income from Small Businesses



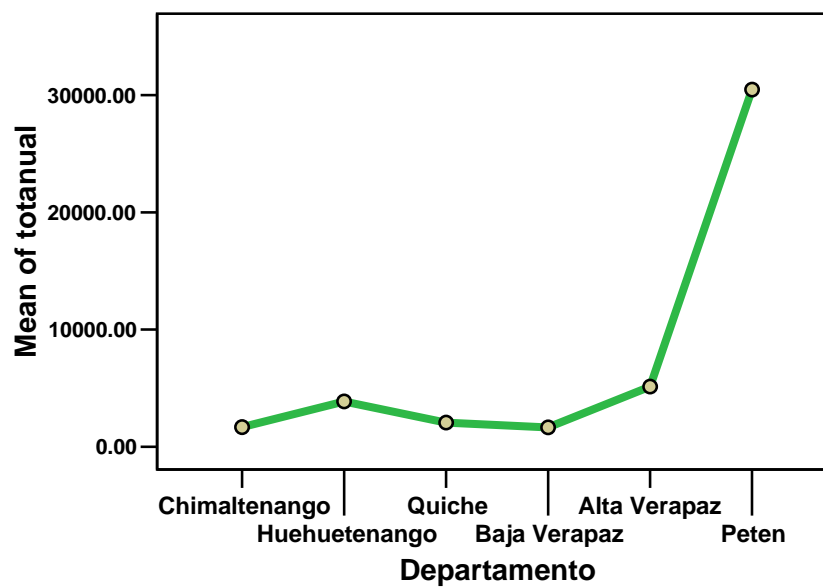
### Total Earned Monthly Income from all Sources



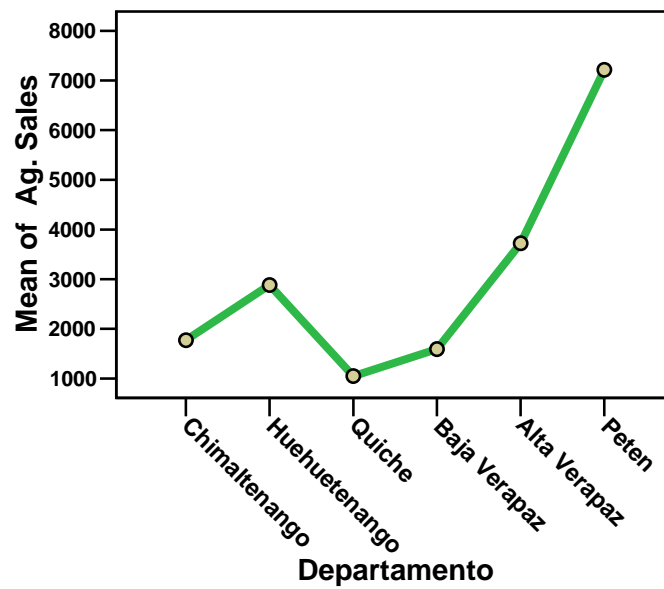
### Monthly Income from Transfers & Pensions



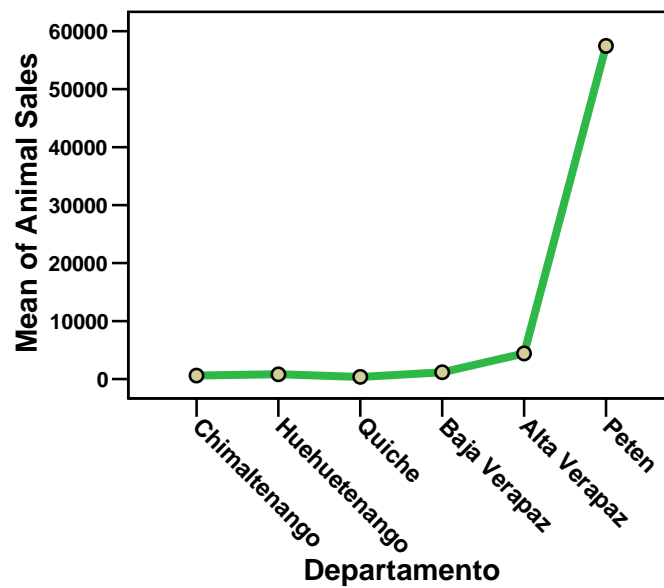
### Annual Income from all Sources except Salaries

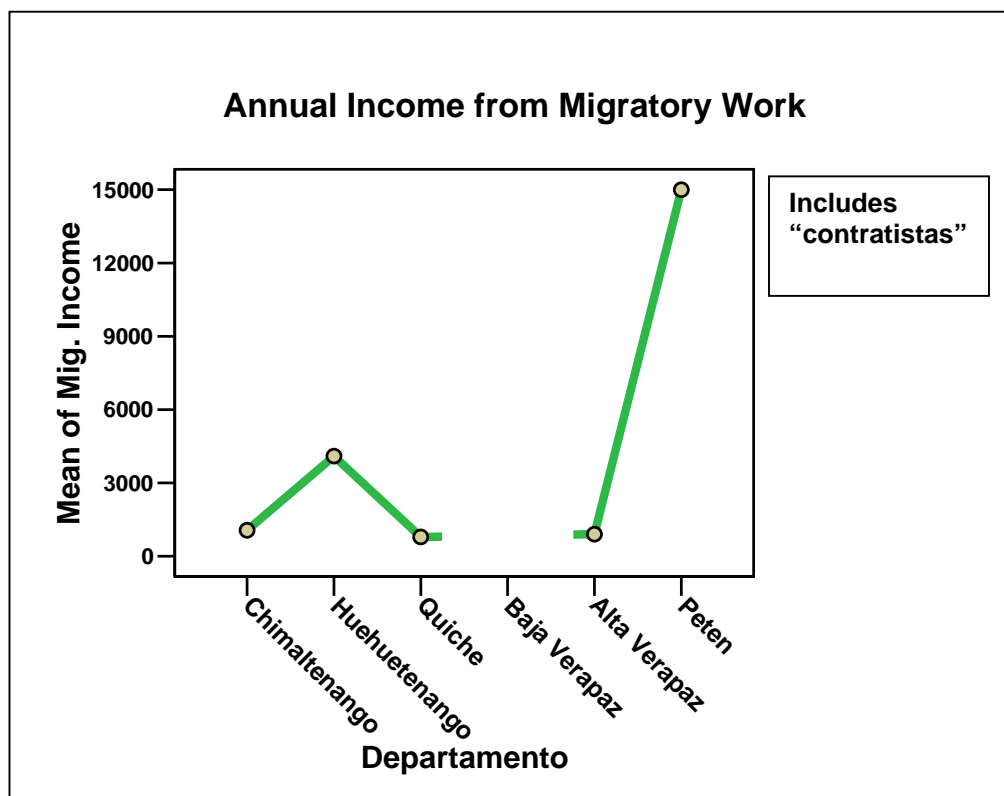


### Income from Annual Agricultural Sales

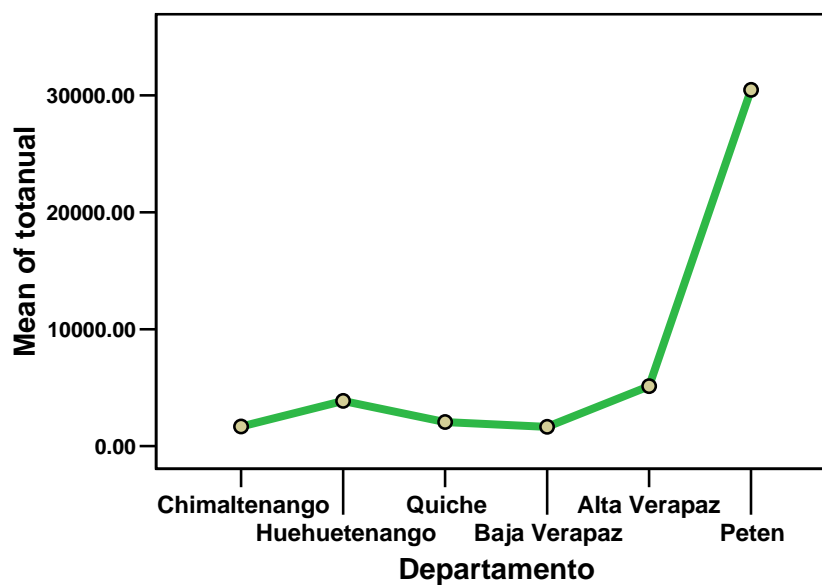


### Annual Income from Animal Sales





**Annual Income from all Sources except Salaries**



Municipios show essentially the same differences between and among municipios as the departments. Table i-2 below presents the ANOVA data of income source and municipios.

Table I – 2. ANOVA Table by Municipios

		df	F	Sig.
Total Pension & Remittances - Month	Between Groups	1	9.568	.002
	Within Groups	551		
	Total	552		
Ag Sales - Annual	Between Groups	1	81.260	.000
	Within Groups	853		
	Total	854		
Migration Income - Annual	Between Groups	1	5.757	.017
	Within Groups	465		
	Total	466		
Total Salary of all Members	Between Groups	1	10.341	.001
	Within Groups	881		
	Total	882		
SRI - Salary Related	Between Groups	1	104.751	.000
	Within Groups	450		
	Total	451		
Total HH Salary & SRI	Between Groups	1	4.714	.030
	Within Groups	887		
	Total	888		
Total HH Enterprise Activities	Between Groups	1	5.221	.023
	Within Groups	986		
	Total	987		
Total HH Income (Salary, SRI & Enterprise)	Between Groups	1	1.277	.259
	Within Groups	1151		
	Total	1152		

Tables 3 and 4 present the findings by Ethnicity and Residence Area

Table 3 Descriptives of Income Variables &amp; Ethnicity and Area

		N	Mean	Std. Deviation
Total Pension & Remittances - Month	Rural Indigena	394	431.26	1326.150
	Rural Ladino	48	571.35	969.883



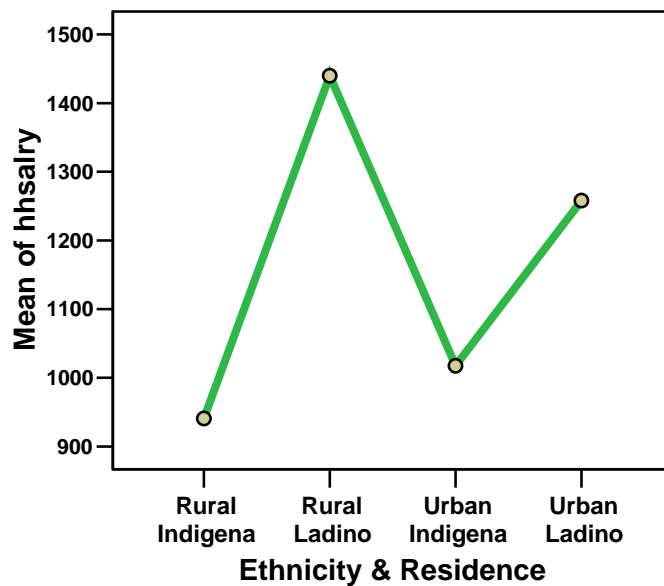
		N	Mean	Std. Deviation
	Urban Indigena	106	198.16	638.911
	Urban Ladino	5	330.00	303.315
	Total	553	397.82	1192.318
Ag Sales - Annual	Rural Indigena	637	2078.36	4369.459
	Rural Ladino	73	2340.07	6947.492
	Urban Indigena	120	848.51	1639.042
	Urban Ladino	22	1234.91	1517.957
	Total	852	1905.79	4358.056
Migration Income - Annual	Rural Indigena	329	1513.84	5160.379
	Rural Ladino	42	496.90	1839.741
	Urban Indigena	94	91.50	525.204
	Urban Ladino	2	700.00	989.949
	Total	467	1132.60	4411.002
Total Salary of all Members	Rural Indigena	628	940.68	1162.386
	Rural Ladino	91	1439.92	1681.999
	Urban Indigena	129	1017.45	1202.081
	Urban Ladino	32	1257.97	1041.698
	Total	880	1015.10	1235.692
SRI - Salary Related	Rural Indigena	315	126.6571	555.22307
	Rural Ladino	36	267.4444	693.85772
	Urban Indigena	97	67.9691	335.14899
	Urban Ladino	4	907.5000	693.46353
	Total	452	132.1858	535.53654
Total HH Salary & SRI	Rural Indigena	632	1012.80	1361.807
	Rural Ladino	91	1545.73	1887.600
	Urban Indigena	130	1243.42	2026.590
	Urban Ladino	33	1935.91	3439.268
	Total	886	1135.76	1662.713
Total HH Enterprise Activities	Rural Indigena	734	959.21	3235.095
	Rural Ladino	90	1417.04	5499.479
	Urban Indigena	131	599.66	1218.621
	Urban Ladino	29	618.66	819.406
	Total	984	943.18	3285.959
Total HH Income (Salary, SRI & Enterprise)	Rural Indigena	849	1569.13	3236.575
	Rural Ladino	116	2275.99	5170.954
	Urban Indigena	144	1606.59	1886.468
	Urban Ladino	39	2051.95	3182.598
	Total	1148	1661.66	3354.828

**Table 4: ANOVA by Income Variables and Ethnicity and Residence Area**

Variables	Source	df	F	Sig.
<b>Total Pension &amp; Remittances - Month</b>	<b>Between Groups</b>	<b>3</b>	<b>1.442</b>	<b>.230</b>
	Within Groups	549		
	Total	552		
<b>Ag Sales - Annual</b>	<b>Between Groups</b>	<b>3</b>	<b>3.126</b>	<b>.025</b>
	Within Groups	848		
	Total	851		
<b>Migration Income - Annual</b>	<b>Between Groups</b>	<b>3</b>	<b>2.897</b>	<b>.035</b>
	Within Groups	463		
	Total	466		
<b>Total Salary of all Members</b>	<b>Between Groups</b>	<b>3</b>	<b>4.819</b>	<b>.002</b>
	Within Groups	876		
	Total	879		
<b>SRI - Salary Related</b>	<b>Between Groups</b>	<b>3</b>	<b>4.120</b>	<b>.007</b>
	Within Groups	448		
	Total	451		
<b>Total HH Salary &amp; SRI</b>	<b>Between Groups</b>	<b>3</b>	<b>5.819</b>	<b>.001</b>
	Within Groups	882		
	Total	885		
<b>Total HH Enterprise Activities</b>	<b>Between Groups</b>	<b>3</b>	<b>1.202</b>	<b>.308</b>
	Within Groups	980		
	Total	983		
<b>Total HH Income (Salary, SRI &amp; Enterprise)</b>	<b>Between Groups</b>	<b>3</b>	<b>1.704</b>	<b>.164</b>
	Within Groups	1144		
	Total	1147		

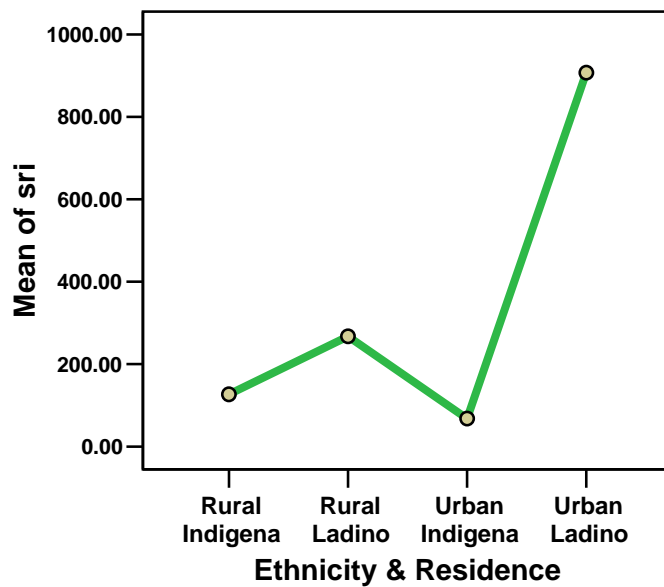
The graphs (following) based on the ANOVA tables.

### Monthly Income from Salaries



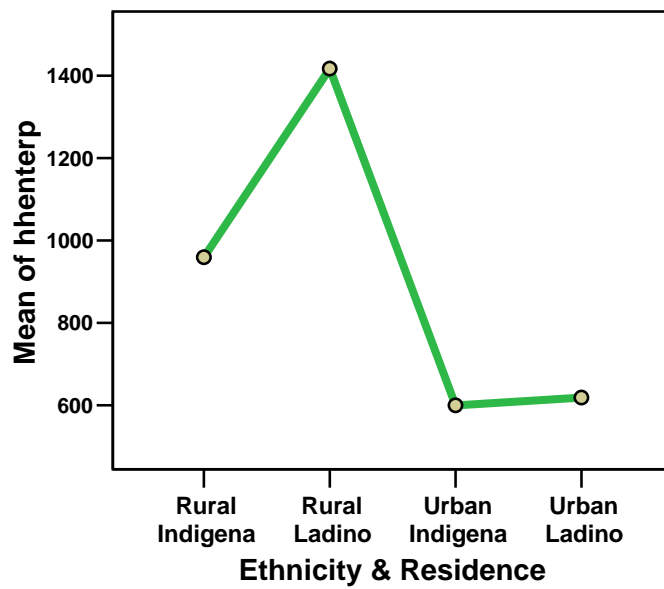
Regardless of residence, ladinos receive higher incomes than Mayans.

### Monthly Income from Salary Related



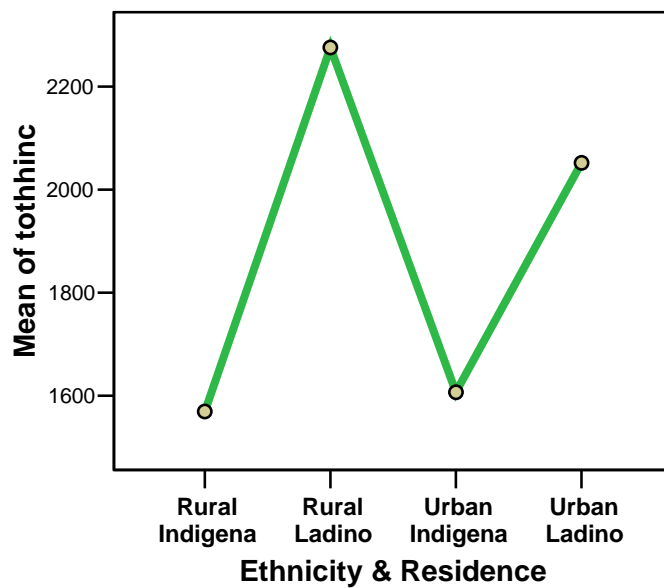
Note the difference between SRI among the different groups. Urban ladinos seem to dominate jobs with higher benefits.

### Monthly Income from Small Businesses



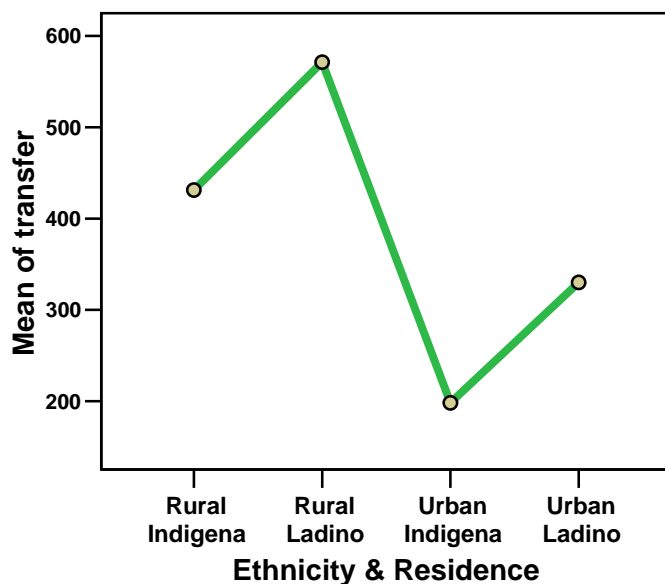
Both rural populations earn more income from small business activities than urban groups.

### Total Monthly Household Income All Sources



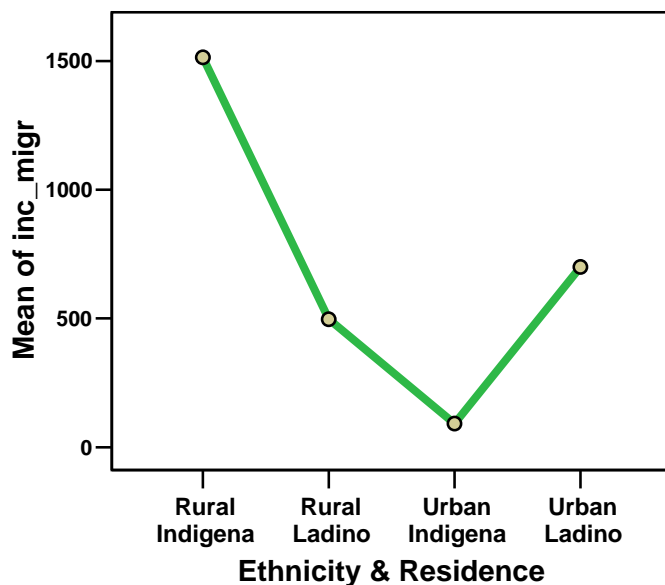
Ladinos, regardless of residence, earn more than mayans in this sample.

### Monthly Income from Transfers & Pensions



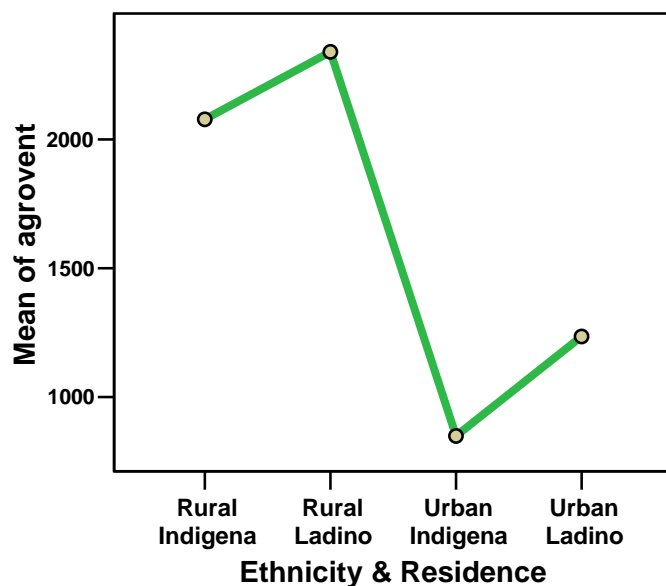
Rural populations receive more in terms of transfers from abroad and pensions than urban populations. This may indicate a willingness to take risk to escape from high poverty in rural communities.

### Annual Income from Migratory Labor



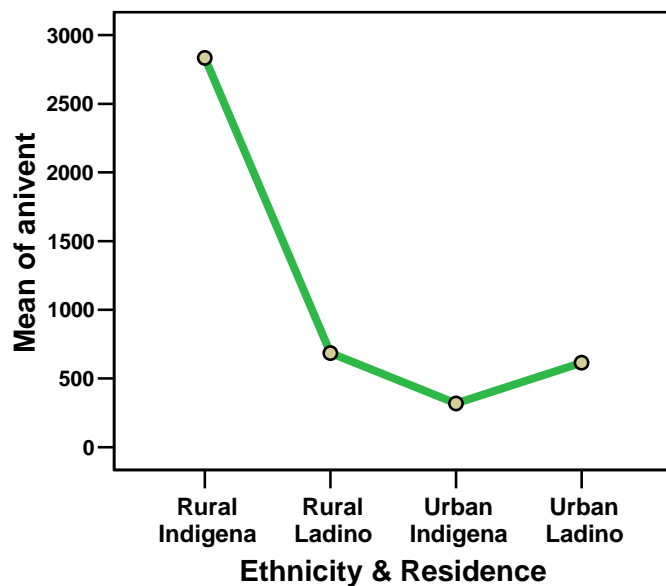
Rural Mayans rely on migration for more of their income than all other groups.

### Annual Income Agricultural Sales



Rural folk earn more annually than their urban counterparts from agricultural endeavors.

### Annual Income from Animal Sales



Rural Mayans derive a high amount of their annual income from animals.

The following Table shows the t-test difference of means on these variables by rural and urban populations. Except for animal and agricultural sales (rural is high), and salary related income (urban is high), there appear to be no significant differences between these groups.

**Independent Samples Test of Means between Rural and Urban Samples**  
**Positive “t’s” are Rural**

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Ag Sales - Annual	Equal variances assumed	7.470	.006	1.268	853	.205	543.007
	Equal variances not assumed			2.154	361.661	.032	543.007
Animal Sales - Annual	Equal variances assumed	2.416	.121	.748	588	.455	1696.374
	Equal variances not assumed			1.906	551.529	.057	1696.374
Migration Income - Annual	Equal variances assumed	2.879	.090	-2.173	465	.030	-1512.321
	Equal variances not assumed			-1.327	45.547	.191	-1512.321
Total Salary of all Members	Equal variances assumed	1.445	.230	-1.287	881	.198	-130.899
	Equal variances not assumed			-1.332	313.381	.184	-130.899
SRI - Salary Related	Equal variances assumed	7.109	.008	-5.134	450	.000	-627.06795
	Equal variances not assumed			-4.840	19.415	.000	-627.06795
Total HH Salary & SRI	Equal variances assumed	.240	.624	-1.858	887	.064	-252.181
	Equal variances not assumed			-1.663	264.407	.097	-252.181
Total HH Enterprise Activities	Equal variances assumed	.479	.489	-.069	986	.945	-18.199
	Equal variances not assumed			-.105	659.882	.916	-18.199
Total HH Income (Salary, SRI & Enterprise)	Equal variances assumed	1.167	.280	-.120	1151	.905	-28.416
	Equal variances not assumed			-.157	709.847	.875	-28.416
	Equal variances not assumed			.391	209.179	.696	24.64224

The final table tests the means of the same income variables between mayans and ladinos. The differences show most clearly in salary and salary related items on the part of ladinos, and on migratory income for mayans.

## Independent Samples Test of Means between Mayans and Ladinos

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Ag Sales - Annual	Equal variances assumed	1.188	.276	-.423	850	.672	-200.731
	Equal variances not assumed			-.310	104.691	.757	-200.731
Animal Sales - Annual	Equal variances assumed	1.745	.187	.694	587	.488	1631.544
	Equal variances not assumed			1.771	586.722	.077	1631.544
Migration Income - Annual	Equal variances assumed	2.274	.132	.990	465	.323	691.627
	Equal variances not assumed			1.966	115.318	.052	691.627
Total Salary of all Members	Equal variances assumed	7.094	.008	-3.679	878	.000	-438.826
	Equal variances not assumed			-3.023	145.724	.003	-438.826
SRI - Salary Related	Equal variances assumed	11.529	.001	-2.479	450	.014	-218.61019
	Equal variances not assumed			-1.895	43.008	.065	-218.61019
Total HH Salary & SRI	Equal variances assumed	11.008	.001	-3.738	884	.000	-597.418
	Equal variances not assumed			-2.698	139.112	.008	-597.418
Total HH Enterprise Activities	Equal variances assumed	2.416	.120	-.989	982	.323	-317.722
	Equal variances not assumed			-.702	131.118	.484	-317.722
Total HH Income (Salary, SRI & Enterprise)	Equal variances assumed	6.332	.012	-2.230	1146	.026	-645.053
	Equal variances not assumed			-1.641	174.801	.103	-645.053

## Conclusions regarding Income

The foregoing tables and graphs lead to two primary conclusions, both of which are fairly straight forward. Rural populations generally earn more than urban groups from agriculture. As importantly, however, this gross generality needs to be modified by ethnic considerations. Overall, urban ladinos have the economic advantage in jobs and job benefits (including



stability). The rural populations tend to engage in multiple economic strategies, including small businesses such as neighborhood stores, handicrafts and ambulatory sales in order to enhance their earnings. On the whole, however, the households in the Zonapaz Region as a whole, are all relatively poor. The main difference seems to be the kinds of economic niches that they are able to exploit in these environments.

## Credit

Credit is an important part of financial life in the modern and modernizing world. In the developing world, access to credit is often considered a critical factor in terms of economic advancement, especially for farmers and small business people. In the entrepreneurial world, access to credit usually implies a growing business or income related activity. On the other hand, credit is sometimes viewed as a cushion against a poor crop or as support for family emergencies. In Guatemala, credit the micro-level is nearly impossible to obtain; many banks simply will not lend in small amounts, and even those that do, such as state banks, usually have multiple qualifying restrictions and 'red-tape'.

In this sample, about 14% of the households received some sort of a loan over the past 12 months. The amounts are grouped in the following table. Note that about 75% are for Q3000 or less (under \$400).

**Table c-1 Loans Rec'd Recoded to Ordinal Ranks<sup>4</sup>**

	Frequency	Valid Percent
0 - 1000	87	48.1
1001 - 3000	46	25.4
3001 - 5000	16	8.8
5001 - 10000	18	9.9
10001 - 75000	14	7.7
Total	181	100.0

As Table c-2 indicates, about 61% of the loans were destined for productive use (agriculture, animals, forestry, and commercial activities); 21% for health and other emergency expenses; and about 18% for housing and education.

**Table c-2 Cross-tabulation of Loan by Purpose by Area**

			Area		Total
			Rural	Urban	
Credit Use	Agriculture	Count	83	1	84
		% within Credit Use	98.8%	1.2%	100.0%
		% within Area	53.9%	2.3%	42.6%
	Animals	Count	8	1	9
		% within Credit Use	88.9%	11.1%	100.0%

<sup>4</sup> The totals differ due to the kinds of questions asked. The question regarding amount of loans was asked relative to the last 12 months. The questions regarding use and source of loans refer to current loans held by the household. Thus existing loans are included in the details but not in the amounts.

			Area		Total
			Rural	Urban	
		% within Area	5.2%	2.3%	4.6%
	Forestry	Count	2	0	2
		% within Credit Use	100.0%	.0%	100.0%
		% within Area	1.3%	.0%	1.0%
	Health	Count	6	0	6
		% within Credit Use	100.0%	.0%	100.0%
		% within Area	3.9%	.0%	3.0%
	Education	Count	5	5	10
		% within Credit Use	50.0%	50.0%	100.0%
		% within Area	3.2%	11.6%	5.1%
	Housing	Count	10	14	24
		% within Credit Use	41.7%	58.3%	100.0%
		% within Area	6.5%	32.6%	12.2%
	Commercial	Count	12	13	25
		% within Credit Use	48.0%	52.0%	100.0%
		% within Area	7.8%	30.2%	12.7%
	Emergency	Count	26	9	35
		% within Credit Use	74.3%	25.7%	100.0%
		% within Area	16.9%	20.9%	17.8%
	Ceremonial Use	Count	2	0	2
		% within Credit Use	100.0%	.0%	100.0%
		% within Area	1.3%	.0%	1.0%
Total		Count	154	43	197
		% within Credit Use	78.2%	21.8%	100.0%
		% within Area	100.0%	100.0%	100.0%

Rural households had 78% of the credit received vs. 22% for the urban sample, with loans for agriculture alone amounting to 42% of the total loans in force at the time of the interview. Loans for commercial activities accounted for about 13% of all loans.

What is somewhat alarming, however, is the 21% of loans taken for health and emergencies. This implies that there is very little savings for such events and/or that a significant part of the population does not have access to emergency resources, such as health services. The problem of using credit for emergencies is that it has no productive benefit at the end of repayment (some micro-economists will argue that health recuperation is indeed an economic benefit). Nevertheless, if it is a health issue for a productive member, the time and timing of the illness results in both lost productivity as well as the loan and interest.

### Interest Rates

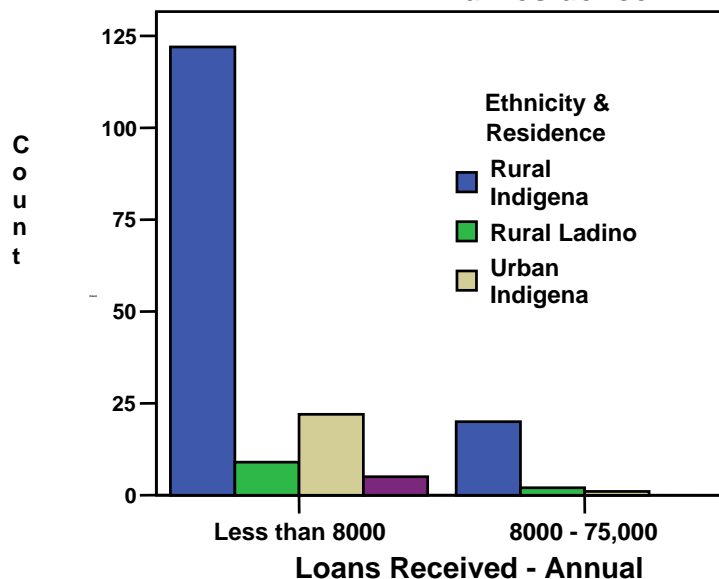
Table c-3 shows the per-month interest rates by rural and urban groups. The chi-square statistic is 7.5 and is not significant between groups. The large number of interest-free loans (26%) comes from friends and family sources.

**Table c-3 Cross-tabulation of Interest Rates by Residence Area**

			Area		Total
			Rural	Urban	
Interest Rate/Month	None	Count	41	9	50
		% within Interest Rate/Month	82.0%	18.0%	100.0%
		% within Area	28.1%	18.8%	25.8%
	1 - 2% per month	Count	47	17	64
		% within Interest Rate/Month	73.4%	26.6%	100.0%
		% within Area	32.2%	35.4%	33.0%
	2.1 - 3% per month	Count	31	17	48
		% within Interest Rate/Month	64.6%	35.4%	100.0%
		% within Area	21.2%	35.4%	24.7%
	3.1 - 5% per month	Count	16	3	19
		% within Interest Rate/Month	84.2%	15.8%	100.0%
		% within Area	11.0%	6.3%	9.8%
	5.1 - 9% per month	Count	11	2	13
		% within Interest Rate/Month (	84.6%	15.4%	100.0%
		% within Area	7.5%	4.2%	6.7%
Total		Count	146	48	194
		% within Interest Rate/Month	75.3%	24.7%	100.0%
		% within Area	100.0%	100.0%	100.0%

The majority of loans are given for one year (60%), and the mode for the amount of loans provided is Q500 (around \$65). While this amount is small, it amounts to about 1/3 to 1/2 month income for this population.

About 8% of the loans are substantial ranging from Q8,000 through Q75,000 (from about US\$1000 through \$10,000). There does not seem to be any difference in terms of ethnicity or residence regarding these larger loans. As can be seen in the graph below (c-4), there is no significant difference among these groups. When ethnicity alone is examined, the split is 50%-50%. Any difference in balance is due to residence, and since the large loans are all for productive activities, particularly agriculture, this is the best explanation.

**Graph c-4****Large and Small Loans by Ethnicity  
And Residence****Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.717(a)	3	.437
Likelihood Ratio	3.741	3	.291
Linear-by-Linear Association	2.418	1	.120
N of Valid Cases	181		

**Guarantees**

The following Table (c-5) provides information on the kinds of guarantees for these loans by residence area. The findings are statistically significant due to the large amount of un-guaranteed loans (52% to 21%) in the rural population (family and friends).

Table c-5 Crosstab of Loan Guarantee by Residence Area

			Area		Total
			Rural	Urban	
Type of Guarantee	Fiduciary	Count	1	4	5
		% within Type of Guarantee	20.0%	80.0%	100.0%
		% within Area	.7%	9.1%	2.5%
	Property	Count	0	5	5
		% within Type of Guarantee	.0%	100.0%	100.0%
		% within Area	.0%	11.4%	2.5%
	Mortgage	Count	70	25	95
		% within Type of Guarantee	73.7%	26.3%	100.0%
		% within Area	45.8%	56.8%	48.2%
	None	Count	80	9	89
		% within Type of Guarantee	89.9%	10.1%	100.0%
		% within Area	52.3%	20.5%	45.2%
	Other	Count	1	1	2
		% within Type of Guarantee	50.0%	50.0%	100.0%
		% within Area	.7%	2.3%	1.0%
Total		Count	153	44	197
		% within Type of Guarantee	77.7%	22.3%	100.0%
		% within Area	100.0%	100.0%	100.0%

## Conclusion

Except for loans from relatives and friends, access to significant credit depends on the credit-worthiness of the individual. No evidence in this sample indicates that ethnic or residential discrimination forms part of the loan-making process.

As indicated at the outset of this section, credit is an important element in the quest for family well-being and economic advancement. Informal credit in the form of small loans for family matters and emergencies is the dominant credit mechanism here. Loans for productive enterprises are more substantial and depend primarily on the formal credit system. Easy access to small loans from friends and relatives for emergencies may tend to substitute for savings and continue to drain meager resources in terms of repayment and interest. Informal loans can also be due and payable on demand regardless of the terms originally set. In an

environment where “everyone” is poor, a reciprocal emergency among family or friends has the potential to disrupt more than one family’s precarious financial situation.

### **Land Tenancy**

Land, even in relatively small (*minifundia*) amounts constitutes a major form of household wealth throughout Guatemala for both rich and poor. The validity of these “estimated values” is subjective and probably varies among households in the same municipio as well as among municipios and departments. It is difficult to say if the estimates are consistently high or low (as in income) since low estimates are given if the respondents are concerned with tax implications, and high estimates if they think in terms of prospective buyers. Because true values are really market-based and dependent on quality and location of the land itself, the values do not vary around such variables as ethnicity, but rather on their intrinsic qualities. Grouping these values at the municipal and department level probably give better estimates of value per unit.

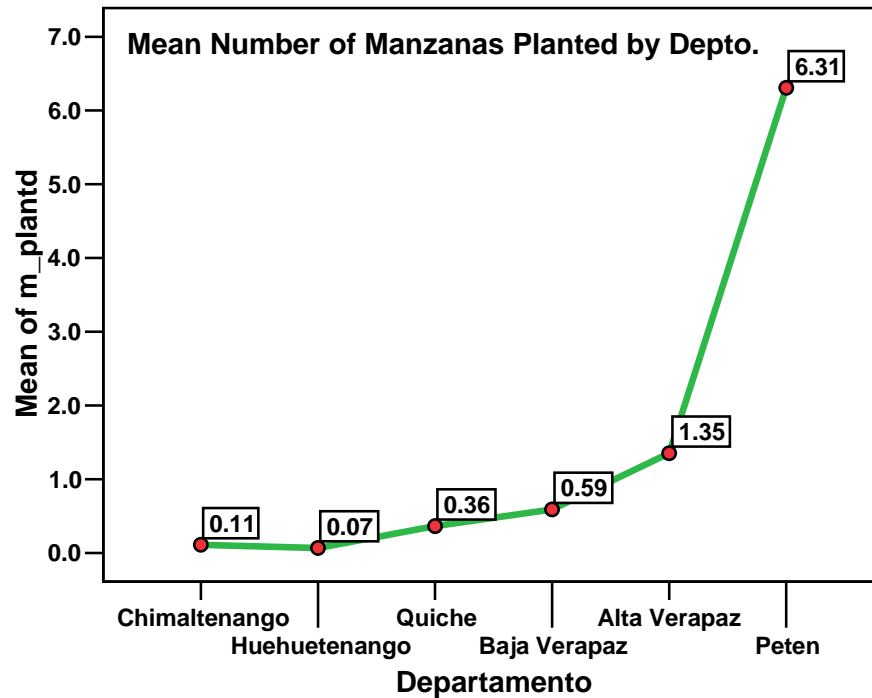
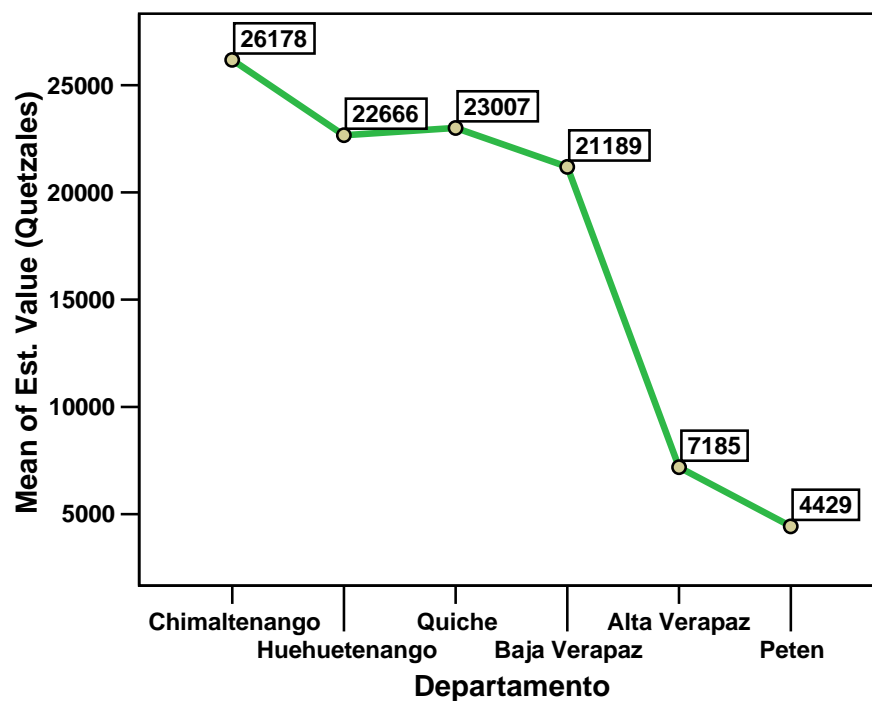
In this sample, land values are inversely related to size, depending on the quality and availability of land. The correlations for the entire sample of land-owners only, show that the inverse relationship holds up for the entire sample as a whole (Table L-1).

**Table L-1 Correlation Matrix Amount of Land & Estimated Land Values**

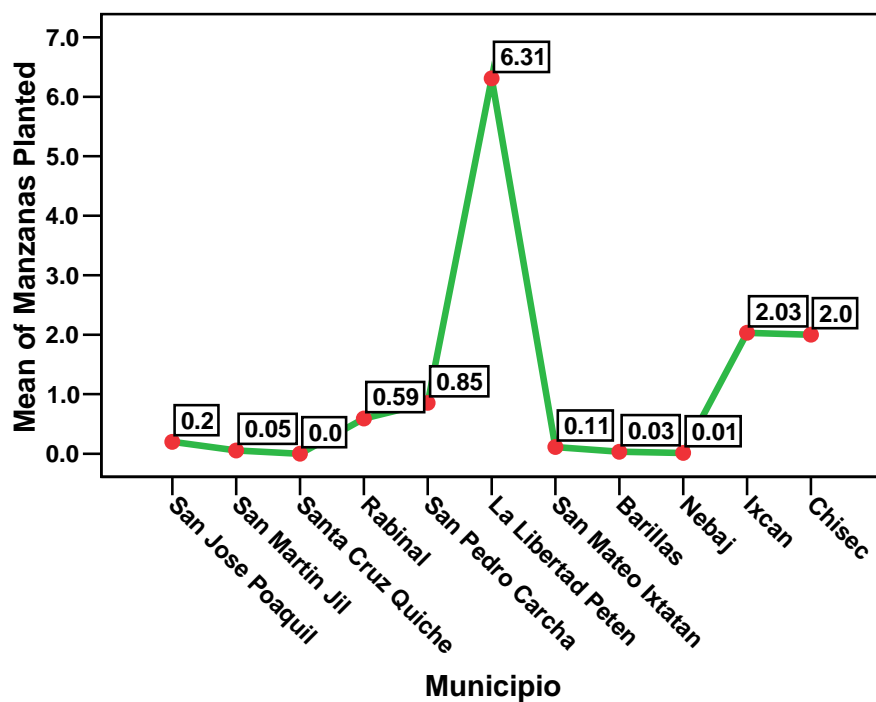
		<b>Manzanas Owned</b>	<b>Number of Manzanas Planted Now</b>	<b>Estimated Value in Quetzales</b>	<b>Manzanas Controlled</b>
<b>Manzanas</b>	<b>Pearson Correlation</b>	1			
	<b>Sig. (2-tailed)</b>	.			
	<b>N</b>	1148			
<b>Number of Manzanas Planted Now</b>	<b>Pearson Correlation</b>	.629(**)			
	<b>Sig. (2-tailed)</b>	.000			
	<b>N</b>	1098			
<b>Estimated Value (Quetzales)</b>	<b>Pearson Correlation</b>	-.132(**)	-.130(**)		
	<b>Sig. (2-tailed)</b>	.000	.000	.	
	<b>N</b>	855	810	855	
<b>Manzanas Controlled</b>	<b>Pearson Correlation</b>	1.000(**)	.856(**)	-.049	1
	<b>Sig. (2-tailed)</b>	.000	.000	.200	
	<b>N</b>	947	947	694	

\*\* Correlation is significant at the 0.01 level (2-tailed).

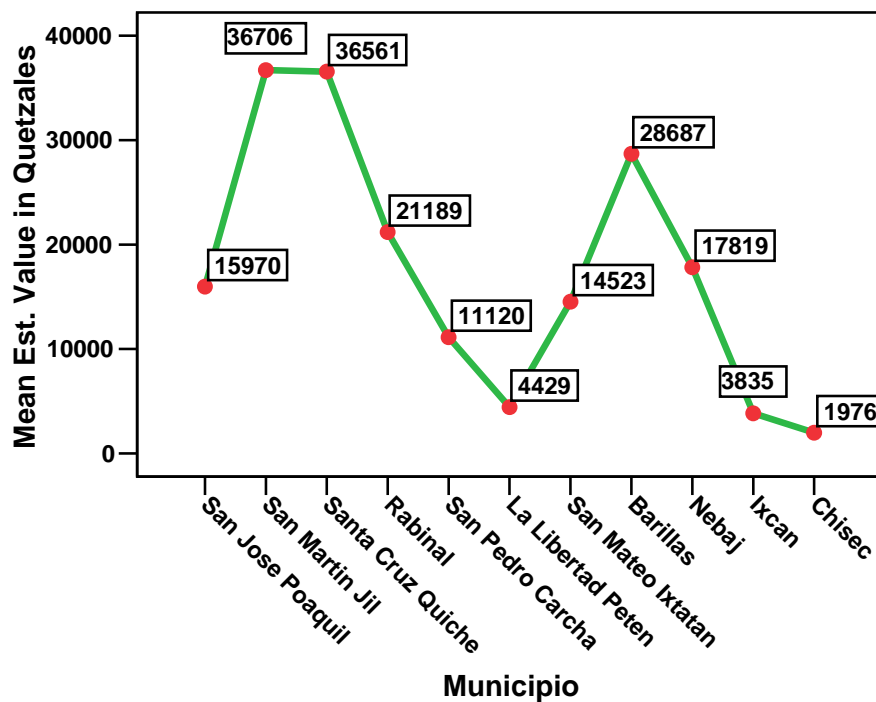
Graphs L-2 through L-5 present data related to land values by department and municipio respectively. These graphs highlight the correlation coefficients observed in Table L-1

**Graph L-2 Land Variables by Department****Graph L-3 Value of Land by Department**

**Graph L-4**  
**Mean Number of Manzanas Planted 2003**



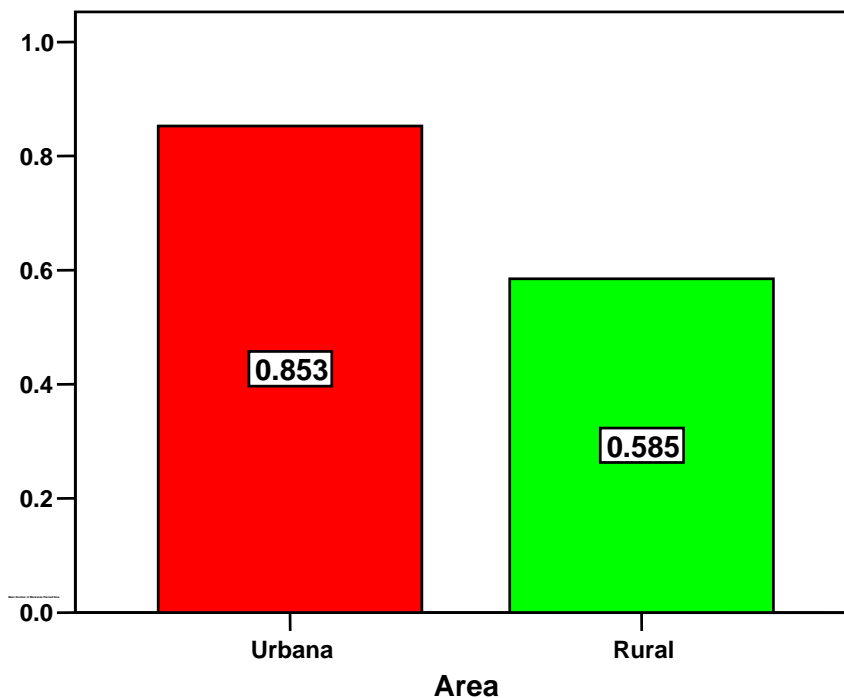
**Graph L-5**  
**Mean Estimated Value of Land 2003**



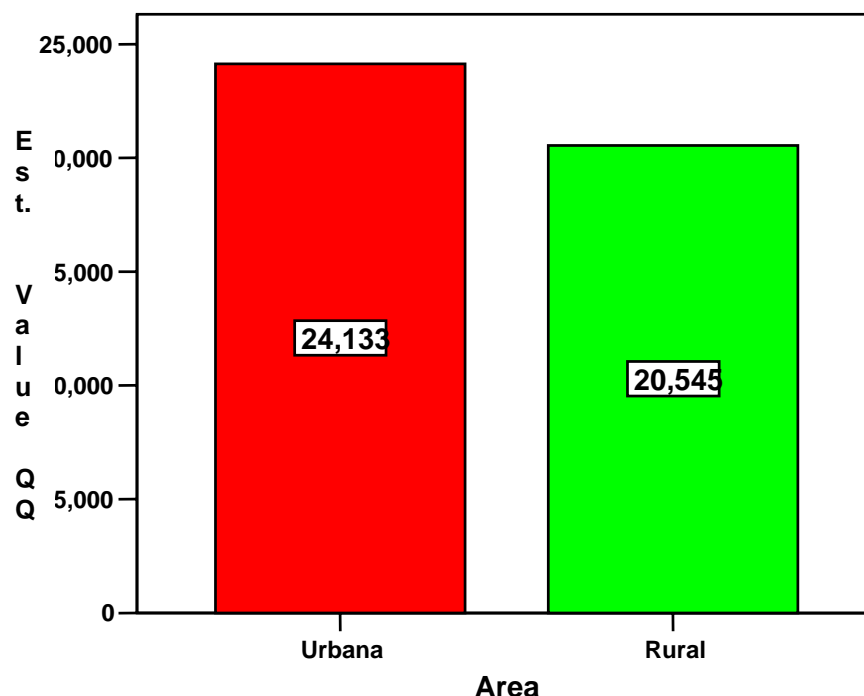


The only real consistency in terms of land both in terms of quantity and value in general is that more and better land is held by urban residents than by rural residents. This should come as no special surprise given the tendency of larger and more affluent land-owners to live in nearby towns with services and other facilities.

**Graph L-5**  
**Mean Number of Manzanas Planted 2003**



**Graph L-6**  
**Mean Estimated Value of Land 2003**



## Conclusion

Land holdings and values are inversely related throughout the sample. Estimates of the size of the land held and planted is probably more valid than estimates of value which is market-determined.

Urban people, mostly ladinos, have control (not just access) to more land and that land is consistently valued higher than that land owned by rural residents.

## *Indirect Economic Indicators – Standard of Living Scales*

### Housing

Housing, its tenure, and construction, has proven to be a good indirect economic indicator of well-being on nearly a world-wide basis. This section focuses on the differences found in EBF-3 along several dimensions “housing”:

- Tenure
- Construction Materials
- Size and Crowding
- Kitchen Facilities
- Sanitation Facilities, Water and Electricity

In addition to serving as economic status surrogates, housing indicators serve as readily measurable targeting indicators that can be used by public and private agencies in determining relative poverty in specific areas.

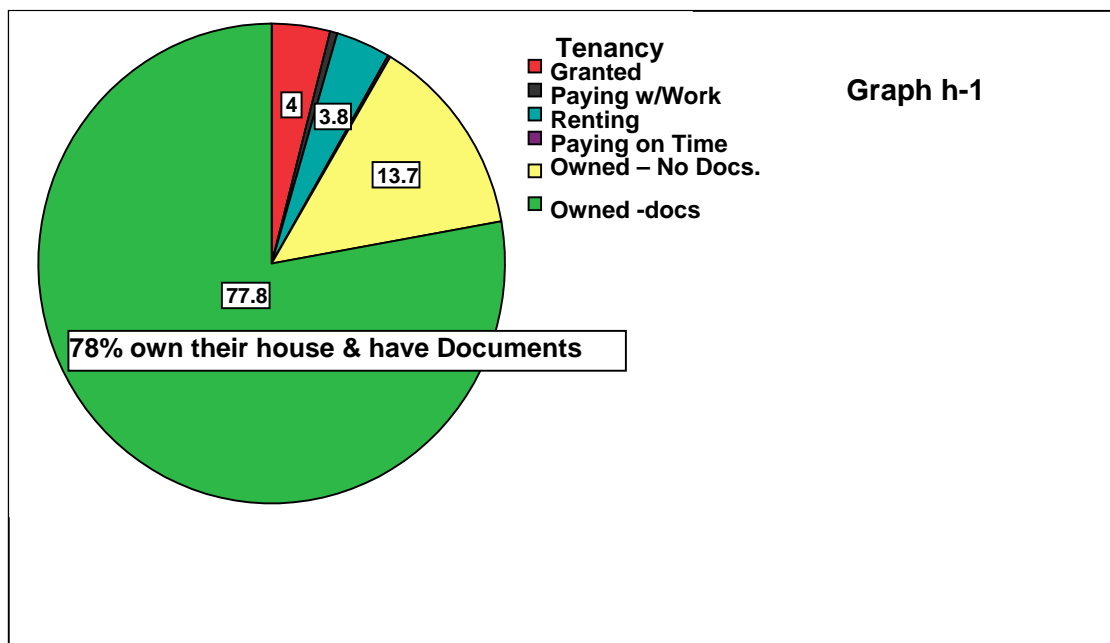
### Methodological Notes

It must be noted that housing indicators are often area-specific. For example, we score “wood walls” as “higher” than cane, mud and wattle (*bajareque*). Nevertheless, in the Petén, walls built of hardwoods such as mahogany (usually as roughly or unfinished slabs), wooden walls are often most common. Consequently the single components of any of the ordinal scales presented are really much less than their scales, and in combination with other housing variables.

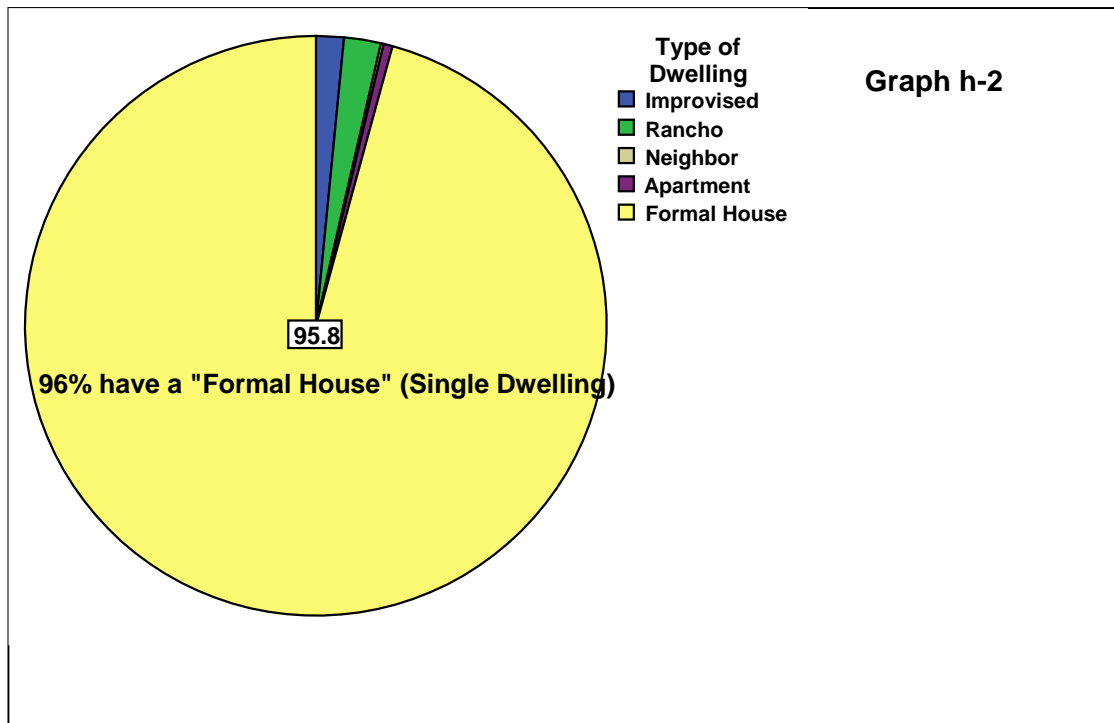
Similar caution applies to electricity. The mere presence of electricity is not a good indicator unless we know if it is “owned” or “illegally shared”.<sup>5</sup> The social and family benefits of “illegal electricity” are basically the same as “owned”. However, “owned” electricity reflects economic access while “shared” electricity usually reflects social or technical access. To account for this, we have used a 3-point scale to reflect electricity access: 0 – No access; 1 – Shared access; 2 – Legal access.

### Tenure and Basic Type of Housing

The vast majority (78%) of the sample lives in owned, single-family dwellings, chi-square = 35.15; sig. = .019. These are “formal” houses, having features of permanence as described by INE. Graphs h-1 and h-2 describe these basic housing indicators.



<sup>5</sup> Electricity “ownership” is defined by having a meter attached to the house. “Shared” electricity involves a “drop-line” of some sort attached to another house or directly to power lines. “Illegal” users may pay a neighbor for the use while the “owner” pays the electric company.

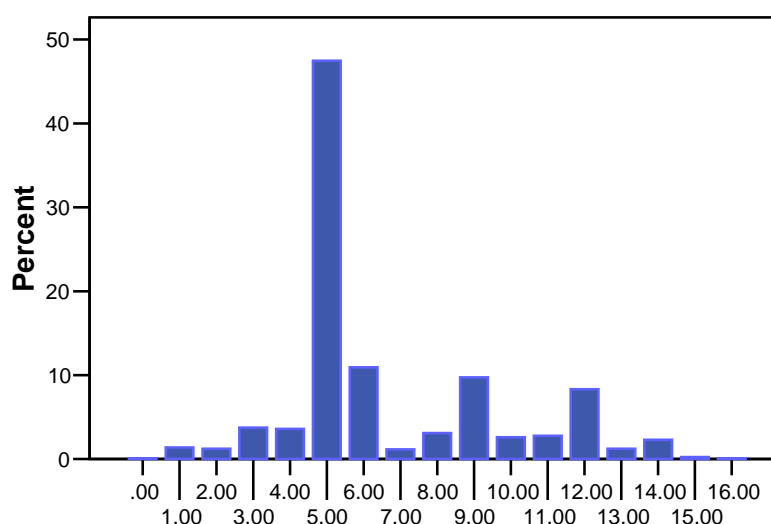


### Housing Scales

The basic housing scale is based on roof, walls and floor materials and is scaled from 0 (lowest) to a possible high of 16. Table h-3 and Chart h-4

**Table h-1: Simple House Scale - Statistics**

N	Valid	1224
Mean		6.6250
Median		5.0000
Mode		5.00
Std. Deviation		2.934
Percentiles	10	4.0
	90	12.0

**Graph h-4 Simple Housing Scale**

As can be seen, the scores group around the median and mean of about 5-6. This would describe a basic house with one or two rooms, with a tin-zinc (lamina) roof, dirt floor and wood, *bajareque* or adobe walls. At the higher end, say from 9 and above, the house would have cement or tile floors, more substantial walls, and either the tin-zinc or a cement roof.

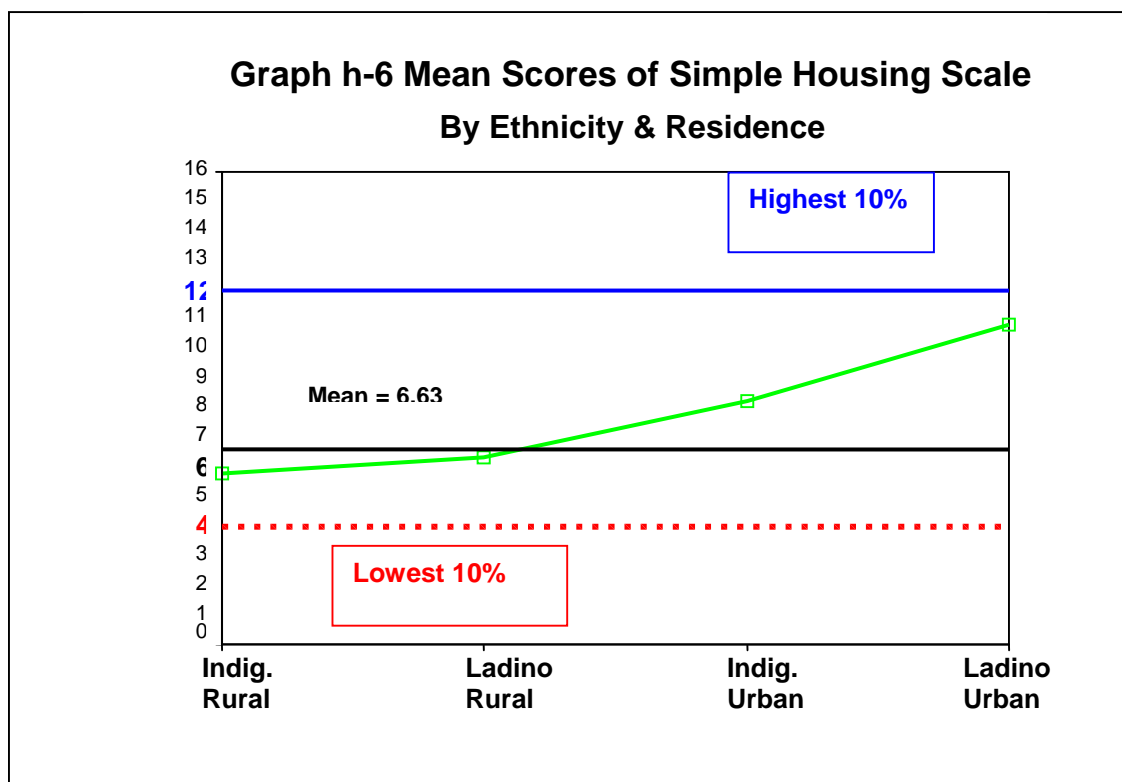
ANOVA tests by ethnicity and residence area provides a useful break-out of how the housing indicator is distributed. Table h-5 and Graph h-6 (following) clearly shows the difference between rural and urban housing scores. Nevertheless, as can be seen in Table h-7, there is also a significant difference between the Indigenous and Ladino Rural populations in the sample ( $t = -2.6$ ,  $\text{sig.} = .01$ ),

**Table h-5: Simple Housing Scale**

Waller-Duncan Test for Sub-Groups

Ethnicity & Residence	N	Subset for alpha = .05			
		1	2	3	4
Indigenous Rural	773	5.7723			
Ladino Rural	157		6.3439		
Indigenous Urban	204			8.2598	
Ladino Urban	89				10.8202

ANOVA = 139.3, df = 3, 1219, sig. = .000.

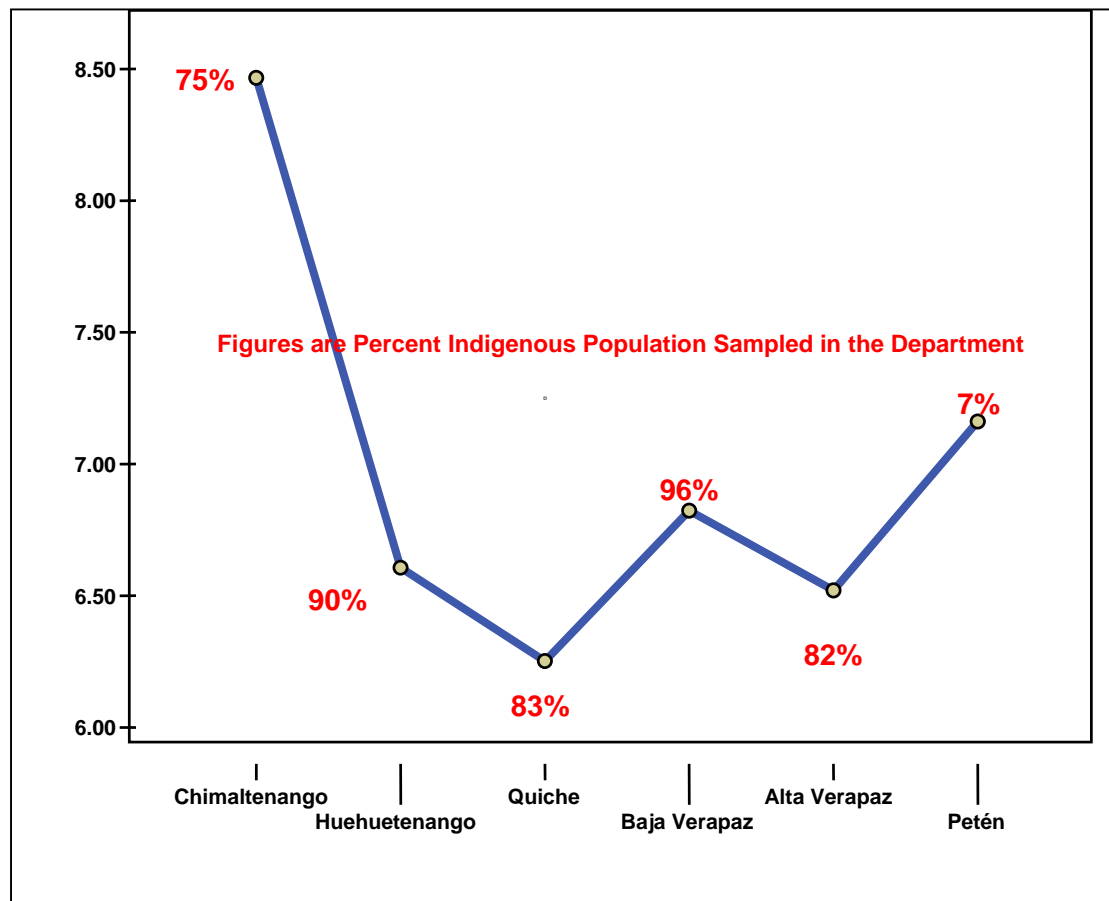


**Table h-7: Independent Samples Test Between Indigenous & Ladino Rural Samples**

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Std. Error Difference
Simple Housing Scale	Equal variances assumed	13.528	.000	-2.727	928	.007	.20958
	Equal variances not assumed			-2.577	212.6	.011	.22186

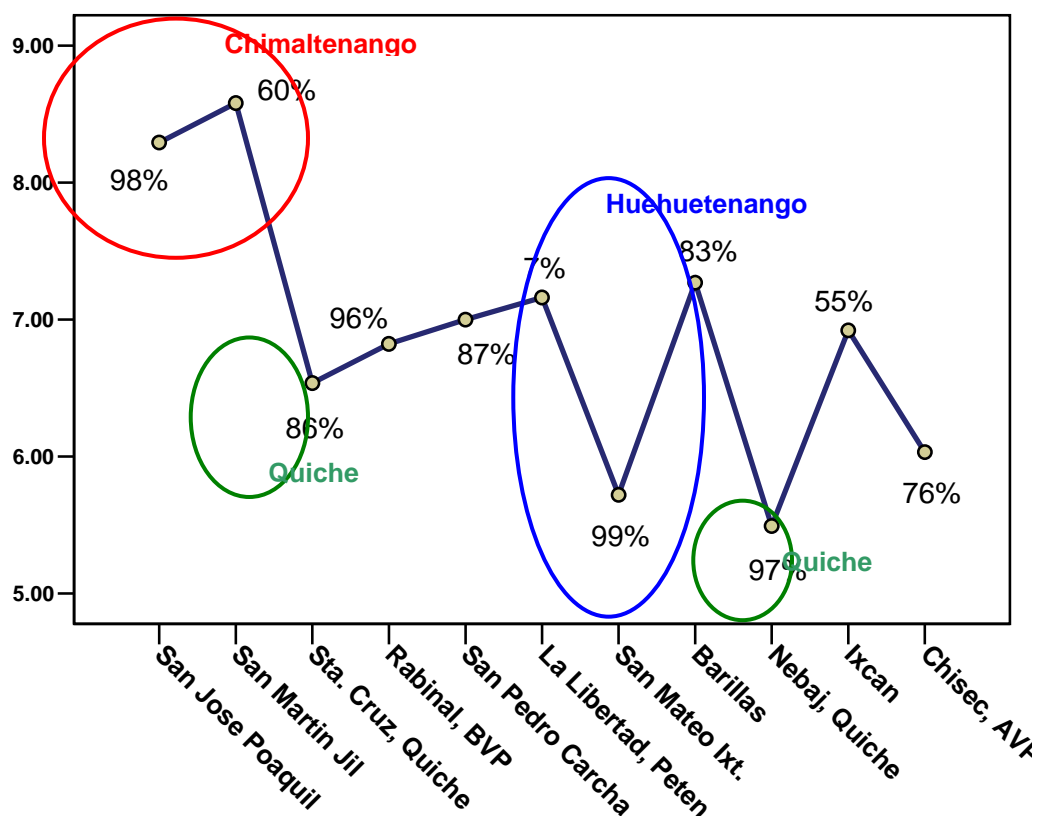
When we review these data by Department by Percentage of Mayans in Table h-8, there is a weak visual correlation between Housing Scale Scores and ethnicity, and there are clear differences among and between Departments. ANOVA  $F = 10.9$ , sig. = .000.

**Table h-8: House Scale Scores by Department  
And Percent of Indigenous Population**



Graph h-9 (following) breaks this information out at the municipal level, and a clearer pattern of differences is seen between the communities with high percentages of Mayans and lower housing scale scores in the same Departments.

**Graph h-9**  
**House Scale by Municipio by Percent Indigenous Population**



The correlation between the housing scale and reported household income, nevertheless, is very low:  $r = .119$ , sig. = .09; and spearman rho = .164, sig. = .026.<sup>6</sup> Regression analysis on House Scale (dependent) with the main cash income variables Income, Migration Earnings, Entrepreneurship, show only about 13% of the variance in housing “explained by” cash earnings.

**Model Summary (b)**

R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
.398(a)	.159	.128	3.50438	.159	5.220	3	83	.002

a Predictors: (Constant), Total HH Enterprise Activities, Total Salary of all Members, Migration Income - Annual  
 The corresponding ANOVA data also tend to discount the relationship of housing to cash income as can be noted from the very high residual sum of squares as opposed to that information in the regression model.

<sup>6</sup> Spearman's rho is significant statistically, but the correlation is very low with an r-squared value 2.6%, indicating that income is certainly linked to housing, but probably not a highly determining factor alone.



## ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	<b>Regression</b>	<b>192.315</b>	3	64.105	5.220	.002(a)
	<b>Residual</b>	<b>1019.29</b>	83	12.281		
	<b>Total</b>	<b>1211.609</b>	<b>86</b>			

a Predictors: (Constant), Total HH Enterprise Activities, Total Salary of all Members, Migration Income - Annual

b Dependent Variable: Simple Housing Scale (Roof, Walls, Floor)

The estimated value of land – owned does not show any similar relation to the house scale (Table h-10). This may be due in part to the number of missing values (about 375) households do not own land.

**Table h-10 – Correlations – Land Value v. House Scale**

			Simple Housing Scale (Roof, Walls, Floor)
Spearman's rho	Estimated Value of Agricultural Land holdings	Correlation Coefficient	<b>.113</b>
		Sig. (2-tailed)	<b>.385</b>

The implications of these distinctions (ethnicity, residence area, and community) for planning and project targeting purposes should be clear. Interventions by public or private agencies can be most efficient by directing their efforts at the community or municipal levels, and use externally observable and verifiable measures to both target and measure successful living-standards interventions such as housing. Indirect measures of both wealth and income appear to be relatively poor predictors of the housing dimension.

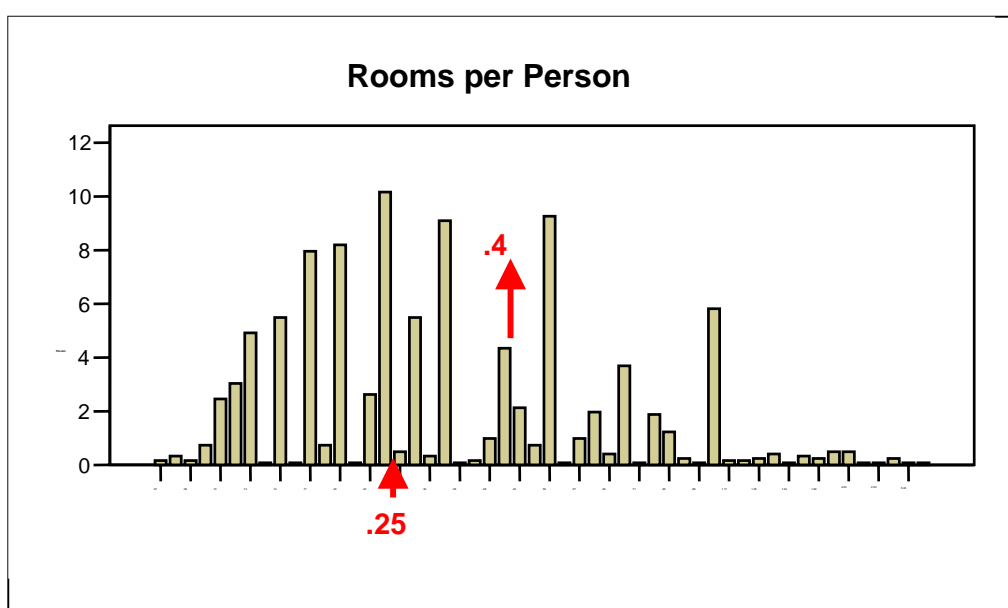
### Crowding

Measures of household members' space are also considered good indirect measures of family well-being and living conditions. The data show a very high level of crowding. Table h-11 shows that each individual has 1/4 of a room of space in general and about the same for sleeping area (the mode is probably the best statistic here).

Clearly such crowding can be detrimental to a number of other factors, including ability to study for children, transmission of air-borne disease, psychological tension and the like.

**Table h—11: Living Space per Person**

		Rooms per Person	Sleeping Rooms per Person
<b>N</b>	<b>Valid</b>	1220	1222
<b>Mean</b>		.4040	.2957
<b>Median</b>		.2857	.2222
<b>Mode</b>		<b>.25</b>	<b>.25</b>
<b>Std. Deviation</b>		.39925	.24259



### Electricity

Access to electricity still remains primarily an urban – rural dichotomy (chi-square = 27, sig. = .000), although there is still a strongly significant difference by ethnicity (chi-square = 16, sig. = .000).

**Table h – 12: Electricity in Home**

	Frequency	Valid Percent
<b>No</b>	442	36.2
<b>Shared</b>	63	5.2
<b>Legal</b>	717	58.7
<b>Total</b>	1222	100.0

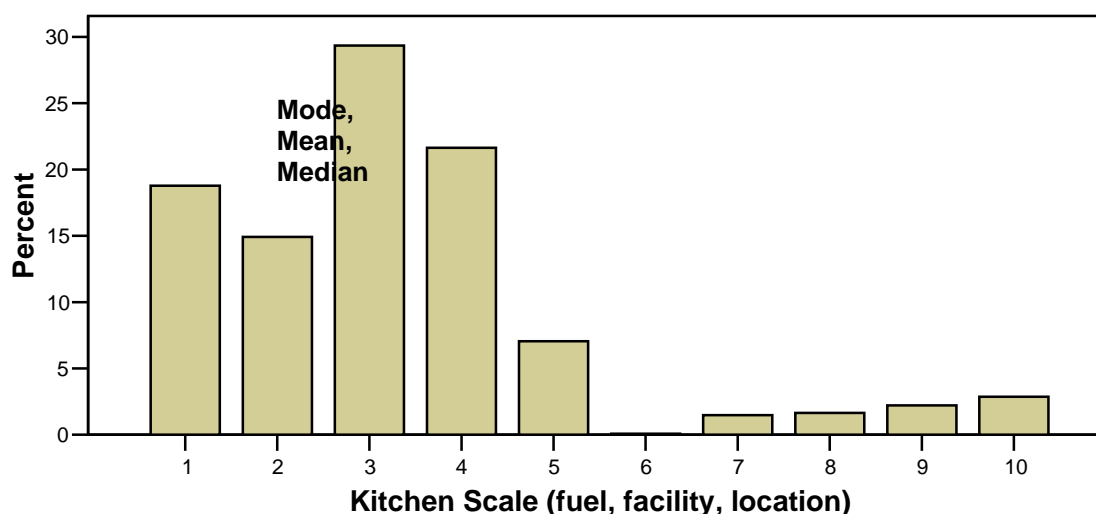
### Kitchen and Cooking Facilities

A kitchen-cooking scale was developed that combines fuel, cooking facility and location. Lower scores indicate that cooking is done using wood (*leña*), in the main house, and either with traditional three-stone hearth (*tenemastes*) or simple cooking platform without a chimney or smoke ventilator. Higher scores (above 5) almost always include some a gas (propane) stove, a separate cooking room and at the highest level, an oven.

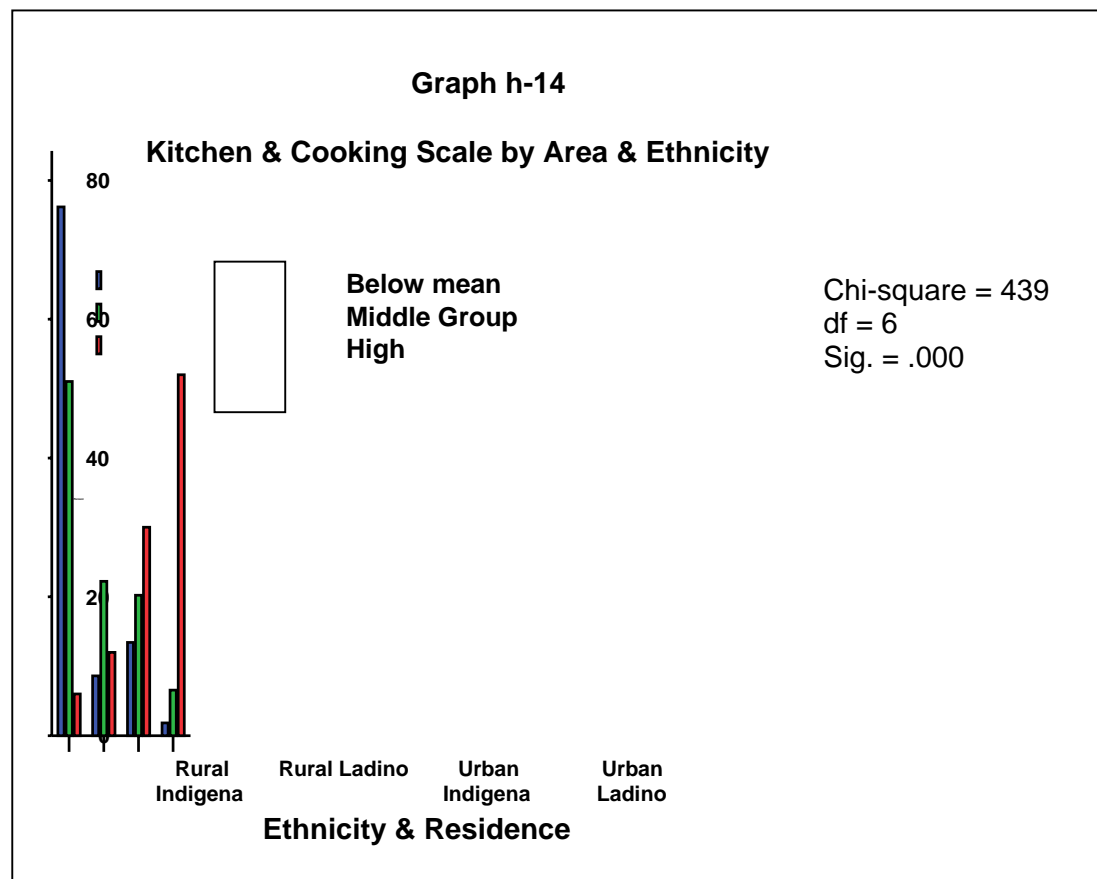
**Kitchen Scale (fuel, facility, location)**

<b>N</b>	<b>Valid</b>	<b>1220</b>
<b>Mean</b>		<b>3.31</b>
<b>Median</b>		<b>3.00</b>
<b>Mode</b>		<b>3</b>
<b>Std. Deviation</b>		<b>2.040</b>

**Kitchen Scale (fuel, facility, location)**



The most salient relationship to this scale is ethnicity. Graph h-14 illustrates the differences among all groups, but clearly, the Mayan sample – regardless of residence area – has relatively poorer kitchen and cooking facilities than the ladino sample.



### Sanitation and Water

Data pertaining to water and sanitation access and use are principally dependent on ethnicity and residence, department and municipio. Because of the multiple ways of analyzing and interpreting this data, I have chosen to include the principal analyses in separate electronic appendices.

In this sub-section the focus is on some gross “cuts” in the data to make them more readily interpretable. Additionally, a scale was created using the sum of the ordinal scores for water, sanitation and electricity that provides a good overall indicator of what I have dubbed “access to healthy living elements”, which of course is grossly oversimplified. Nevertheless it tends to capture another dimension of living standards that were measured and summarizes them in a more manageable form. (The Appendix on basic water and sanitation is 30 pages.)

### Construction of Water and Sanitation Scales

These scales were developed based both on distribution and on qualitative considerations regarding potential for contamination.

**Water source** was recoded based on the following criteria: risk of contamination from source or distance (carrying water exposed to contamination).

**Higher Risk**

Open sources, trucked-in water tankers, community wells

**Lower Risk**

Private wells; public piped sources (where purity *may* be controlled; water in household site or inside the house)

**Sanitation**: risk of transmission of infection/disease (location and type of facility) and the household's ability to control cleanliness of the type of facility.

**Higher Risk**

No facility and all communal facilities (latrines and toilets)

**Possible Risk**

Private Latrines

**Lower Risk**

Private water-seal toilets

**Access to Healthy Life Scale**

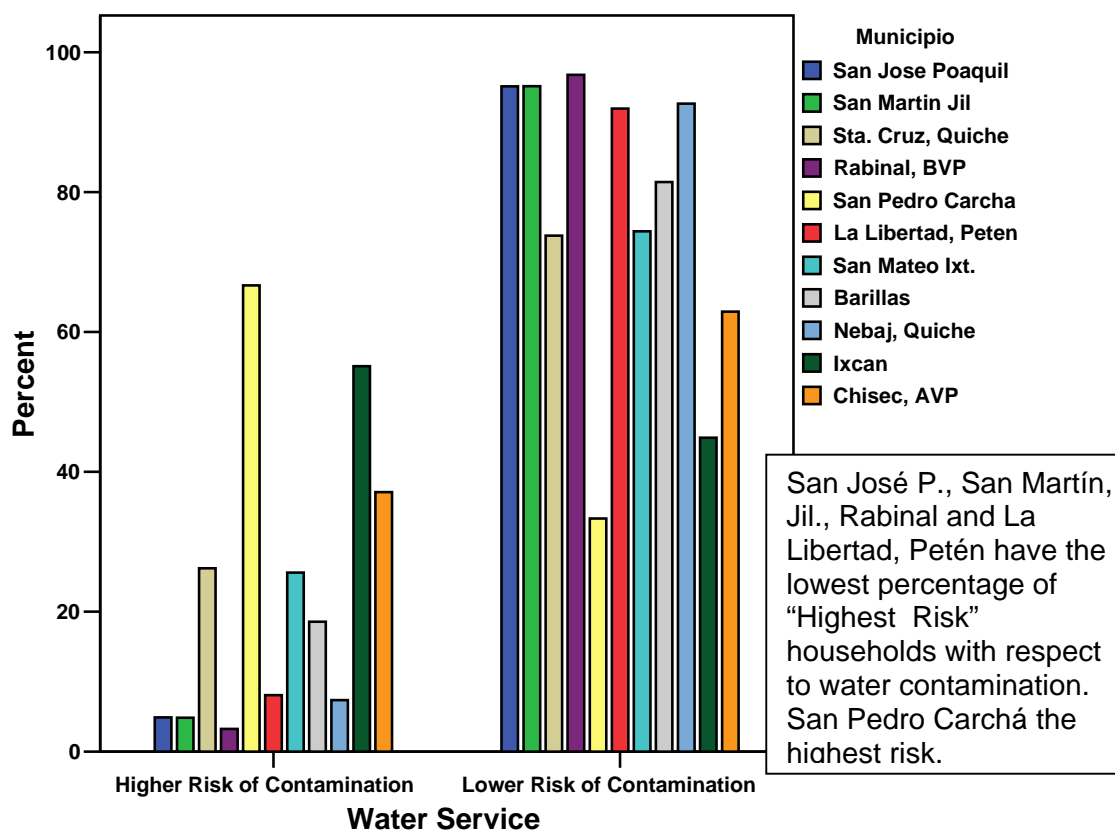
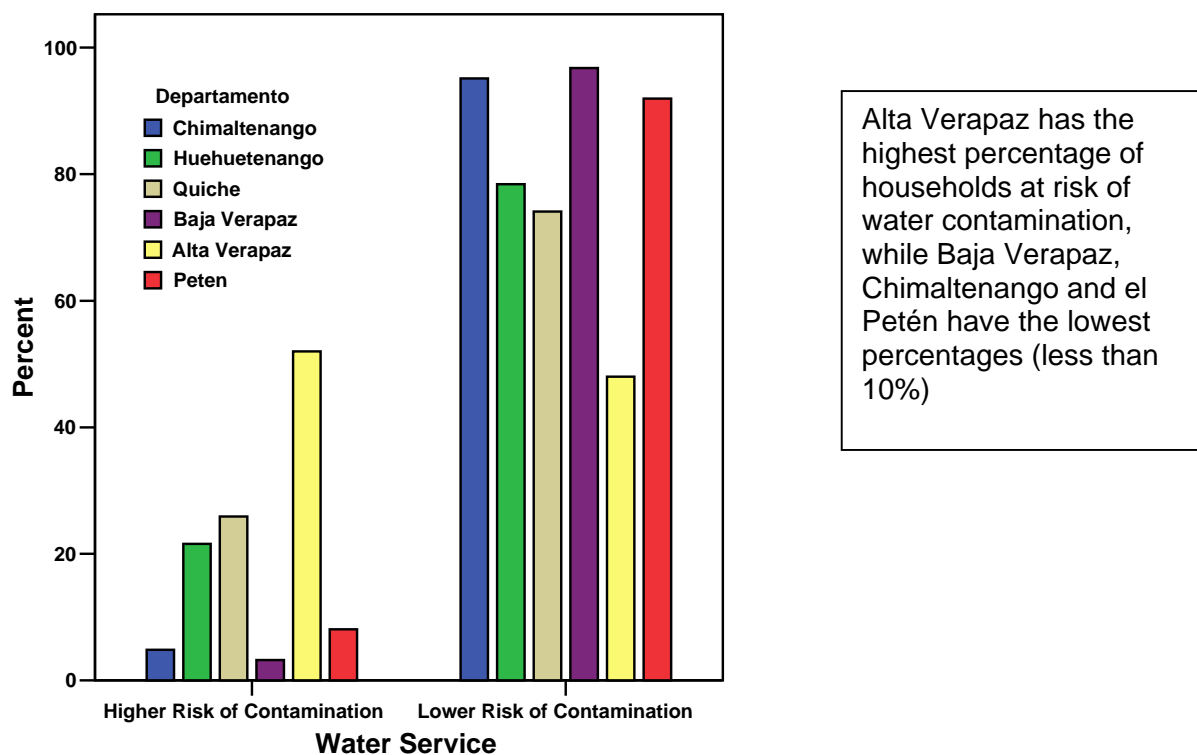
A simple summative scale of un-recoded ordinal scale scores for water, sanitation and electricity.

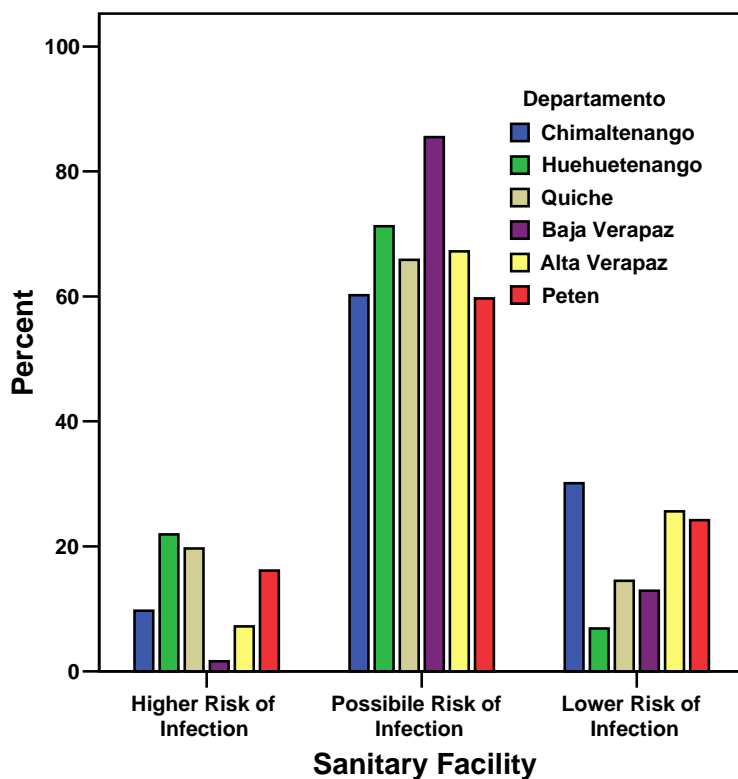
Not surprisingly, for the entire sample, water and sanitary facilities are highly correlated as can be seen in the chi-square table below:

**Table h-15: Chi-Square Tests - Water & Sanitary Facility**

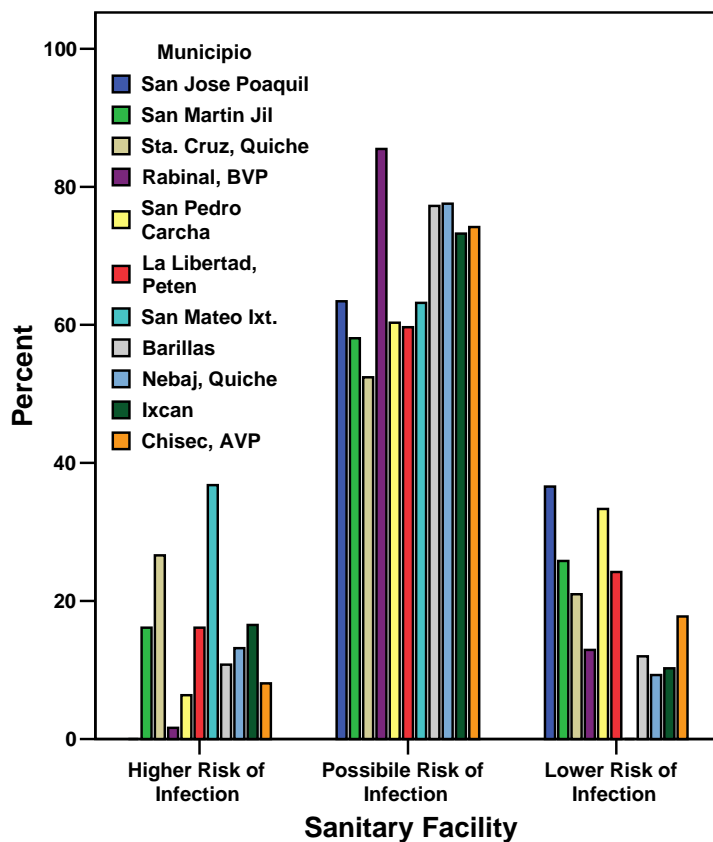
	Value	df	Sig. (2-sided)
Pearson Chi-Square	39.663	2	.000
Likelihood Ratio	39.264	2	.000
Linear-by-Linear Association	38.616	1	.000
N of Valid Cases	1223		

The next four graphs describe the distribution of water and sanitation facilities by department and municipio.

**Tables h- 15 (1-4) Water and Sanitation Facilities by Departments & Municipios**

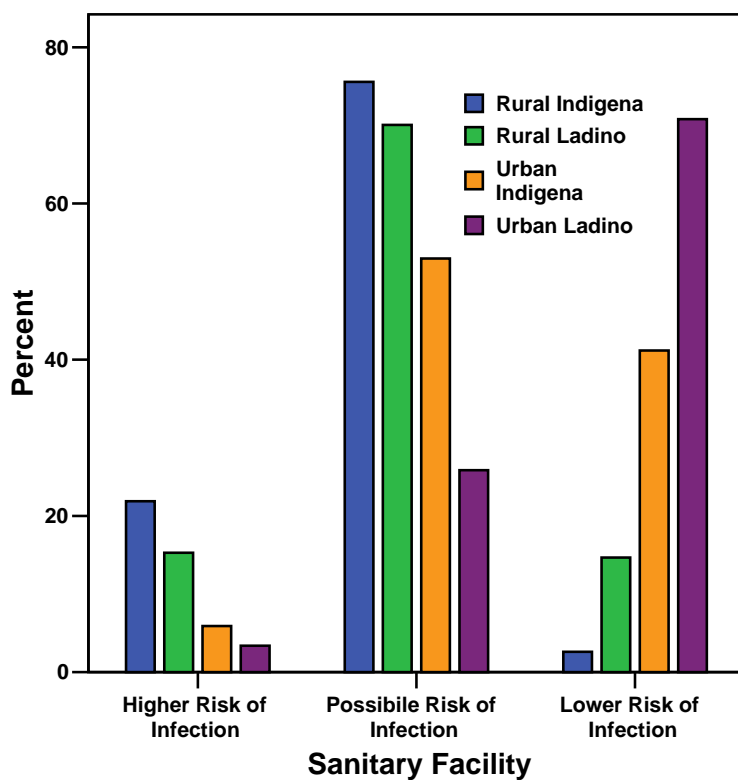


Baja Verapaz has the least percentage of households in the Higher Risk category, followed by Alta Verapaz and Chimaltenango. At the same time Chimaltenango has the greatest percent in the Lower Risk category on Sanitation.



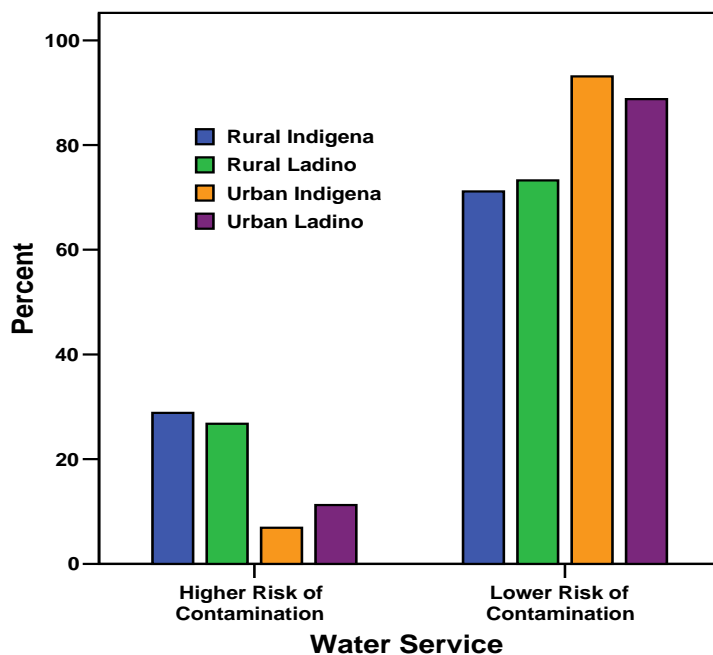
Only San José Poaquil has no household in the "higher risk" category with respect to Sanitation.

Tables h-16 (1-6) Water &amp; Sanitation by Area and Ethnicity

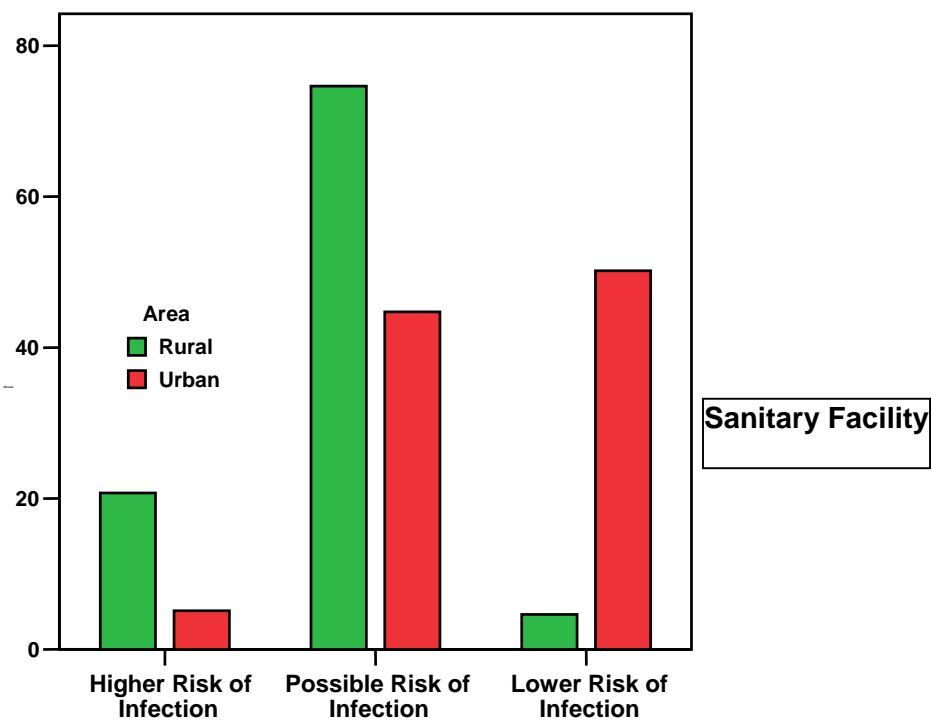
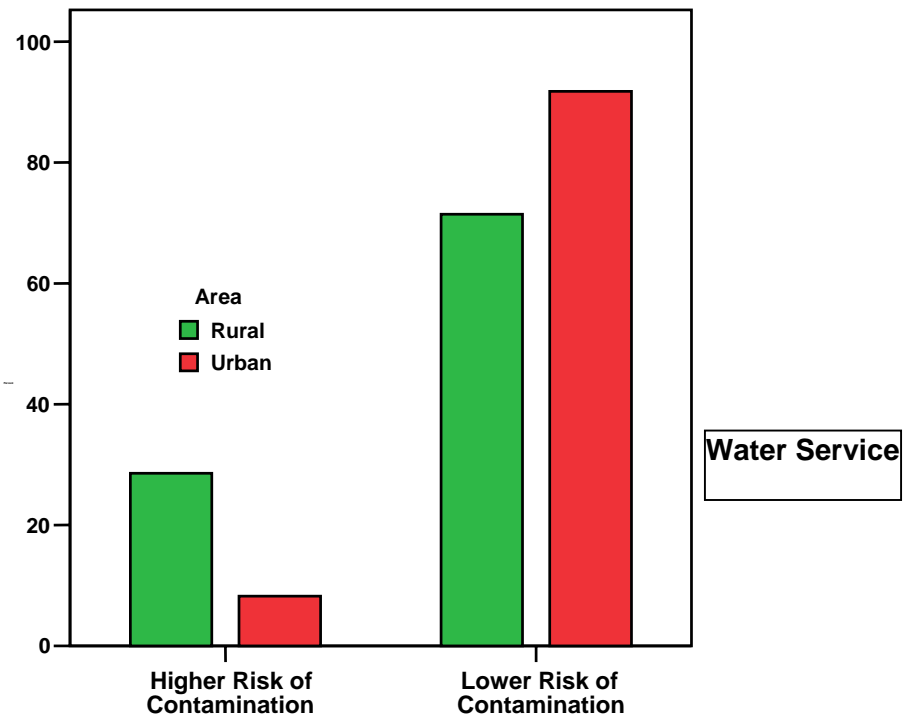


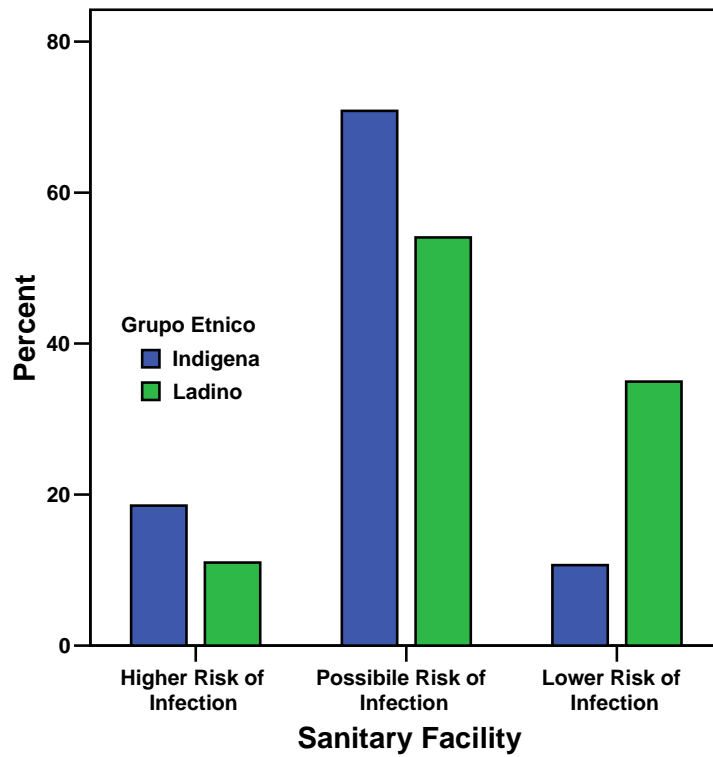
Rural populations, both indigenous and ladino have the highest risk of infection due to sanitation facilities.

This is consistent throughout the sample.

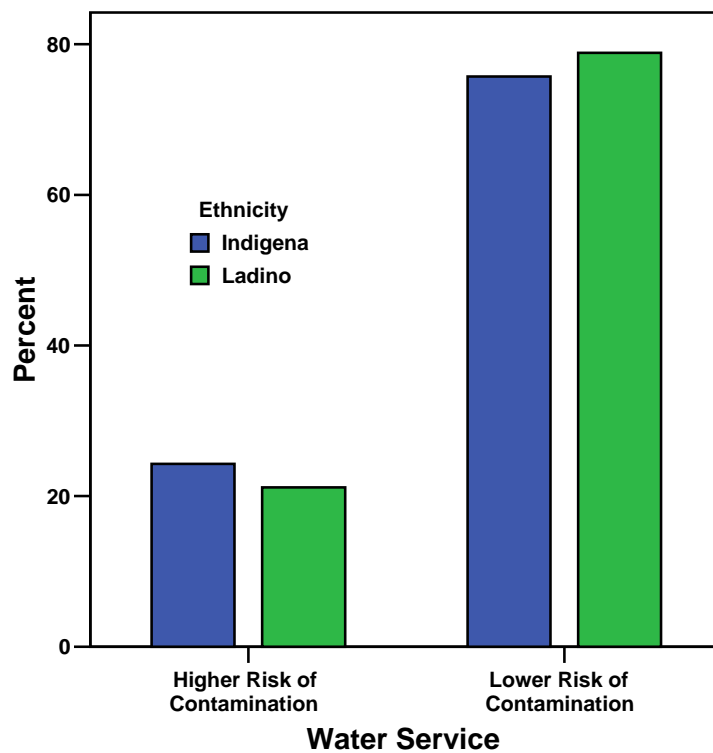








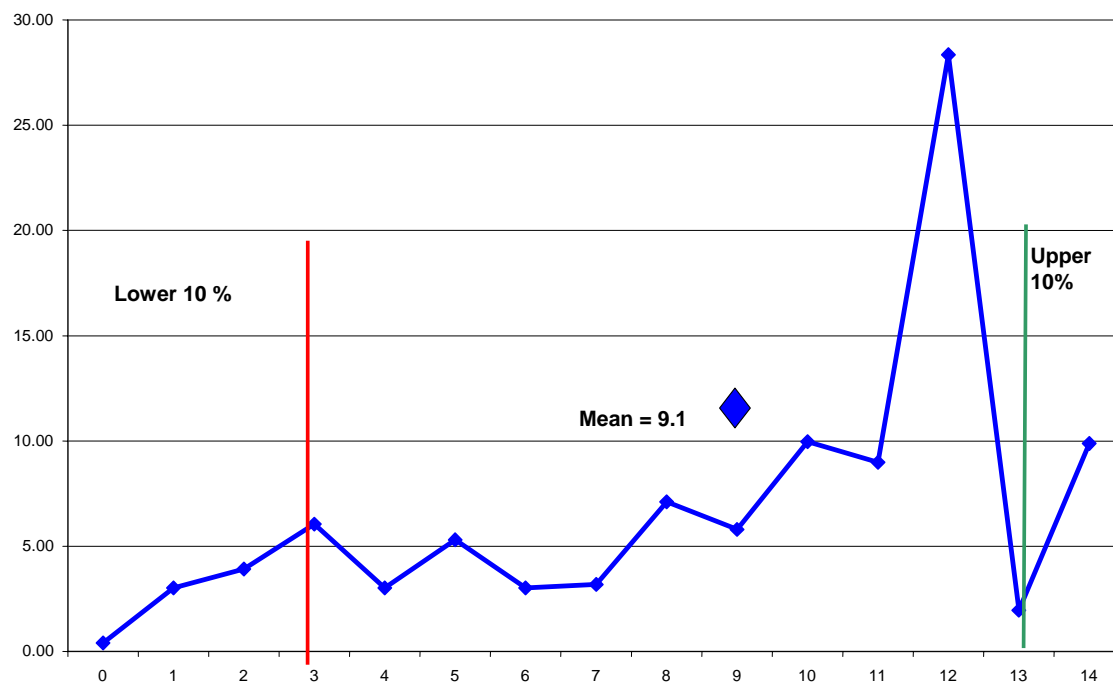
Indigenous households have a slightly higher risk of water contamination and infection than ladinos, but this is not significant statistically.



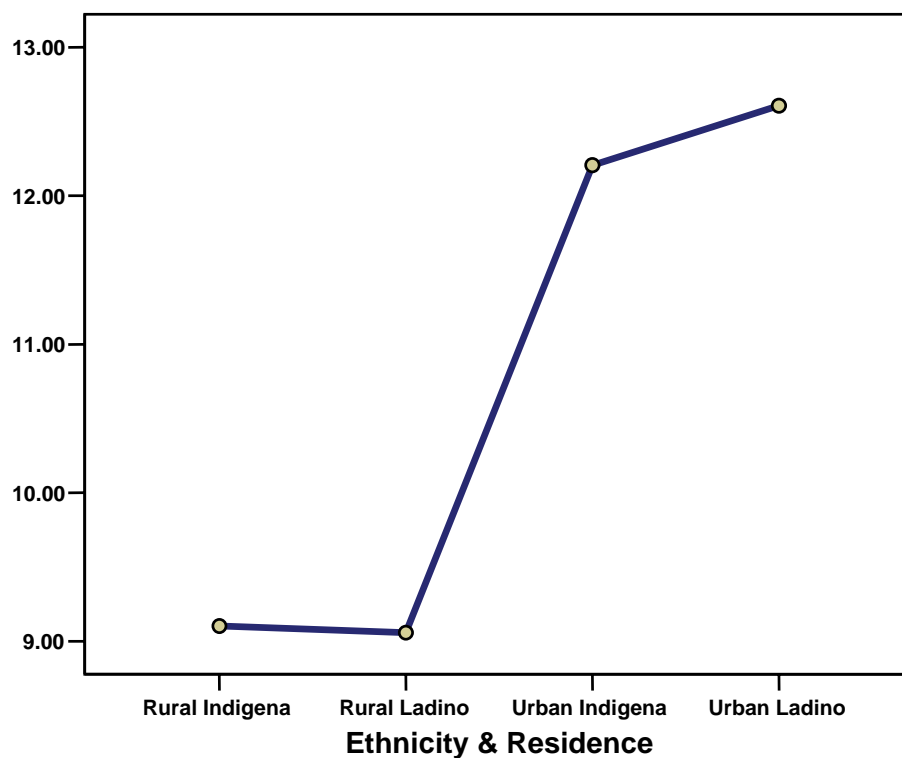
Overall, risk of water contamination and risk of infections/disease due to sanitary facilities is very much higher in rural areas than in urban areas.

Graphs h-17 illustrates the general distribution of the healthy home environment scale, while Graph h-18, provides the findings of the ANOVA analysis for this scale by residence and ethnicity.

**Graph h-17: Healthy Home Environment Scale - Maximum = 14**



**Graph h-18**  
**Access to Healthy Living Scale by Residence and Ethnicity**



**ANOVA (F = 61; Sig. = .000)**  
**Access to Health Living Scale**  
**Waller-Duncan**

Ethnicity & Residence	N	Subset for alpha = .05	
		1	2
Rural Ladino	157	9.0573	
Rural Indigena	773	9.1022	
Urban Indigena	204		12.2059
Urban Ladino	89		12.6067

Means for groups in homogeneous subsets are displayed.

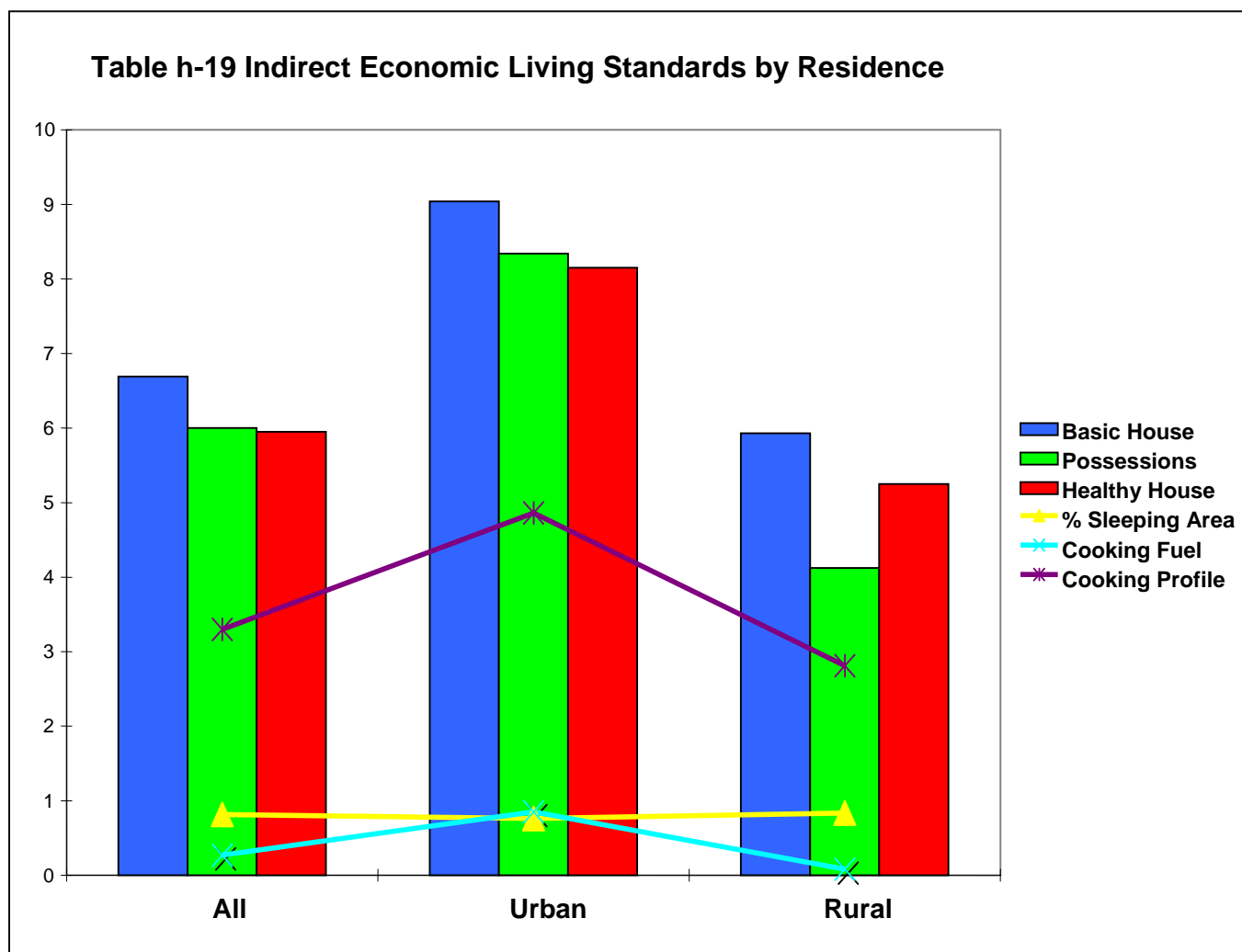
a Uses Harmonic Mean Sample Size = 168.060.

b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

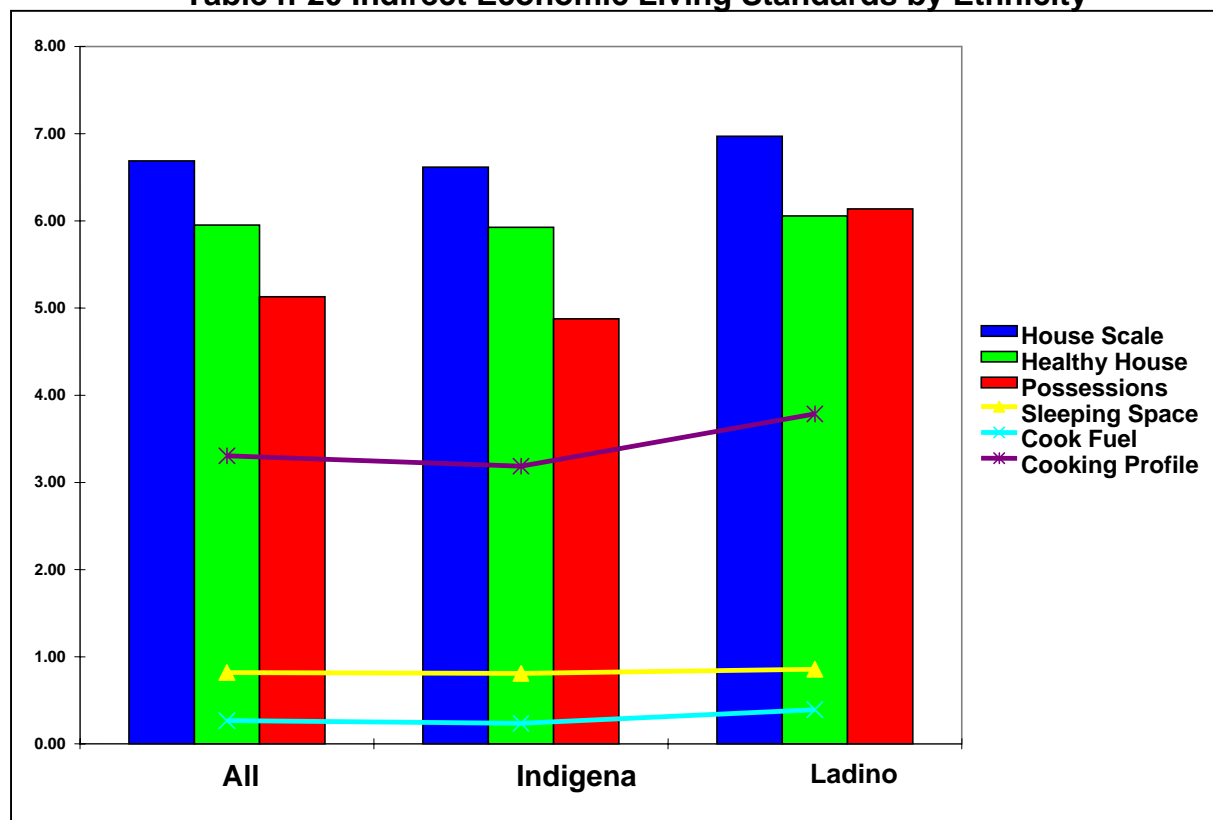
c Type 1/Type 2 Error Seriousness Ratio = 100.

### Summary of Indirect Economic Indicators

Graph h-18 presents an integrated summary of the indirect economic measures by “all”, urban and rural groupings that clearly highlight the differences along these dimensions.



When we visually compare the graph h-19 above to graph h-20 (following) that presents the same variables between “all”, indígena and ladino, it is clear that the major differences with respect to living standards are best described as those between urban and rural populations. This does not imply that ethnicity is not a major indicator of poverty in the population studied – that is observably true by nearly any criterion. The main point is that household material well-being – a condition of the complex interaction of multiple variables over time – is more than income or land tenure, and can be summarized and described by simple and observable variables.

**Table h-20 Indirect Economic Living Standards by Ethnicity**

### Conclusions

The indirect economic measures of “Standards of Living” provide a good and consistent profile of the well-being of the population studied. As importantly, they are easy to measure and have a high degree of validity and reliability. Therefore, they are readily usable by local community members in such exercises as rapid assessments studies, goal-setting and monitoring of progress.

For larger-agency targeting purposes, they have the above advantages, plus these simple indicators can help avoid the problems inherent in general geographic and ethnic targeting and planning by providing a simple series of inexpensive and logical and measurable “downward-to-the-household” steps leading to specific targets for interventions in various standards of living (well-being) interventions.

## Household Expenses

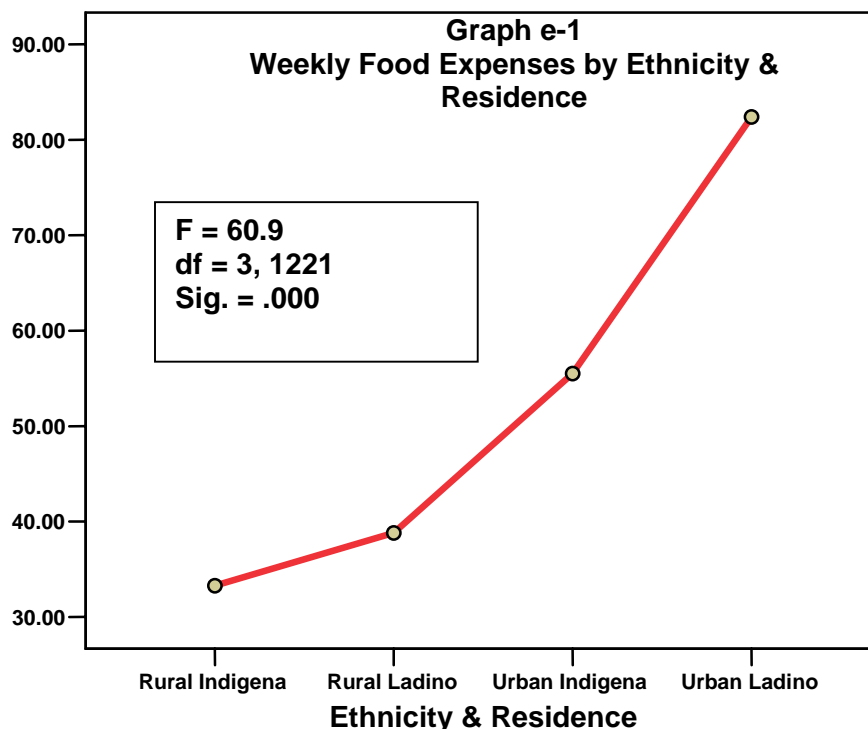
Expenses are generally considered better indicators of cash income than measures of income itself. This has been discussed in earlier presentations of the EBF series and the details and rationale for the argument are not presented here.

In this section we want to look at how the differences in regular household expenses vary by location, ethnicity and residence areas. The analysis is primarily by means tests, both ANOVA and Student's "t". The main variables that will be analyzed are:

- Food expenses – a weekly composite variable of expenses recalled by item-prompt for the week prior to the interview. These are grouped into categories that follow the INE classification.
- Clothing expenses – a quarterly composite variable of expenses on clothing and shoes. It is also divided in expenses for children and adults.
- Housing expenses – a monthly variable that estimates expenses for a variety of household maintenance costs such as minor repairs, electricity, water, cleaning and maintenance materials, etc.
- Personal expenses – which represent expenses directly to individuals within the household such as toilet articles, barber and beauty parlor costs, and other personal articles
- Health expenses – a monthly expense variable for all health care expenses divided into child and adult categories.

## Food Expenses

Graph e-1 demonstrates a very clear difference between urban ladinos and the rest of the



### Total HH Food Expenditures 1 Week

Waller-Duncan

Ethnicity & Residence	N	Subset for alpha = .05			
		1	2	3	4
Rural Indigena	775	181.45			
Rural Ladino	157		213.57		
Urban Indigena	204			260.92	
Urban Ladino	89				354.51

Means for groups in homogeneous subsets are displayed.

a Uses Harmonic Mean Sample Size = 168.084.

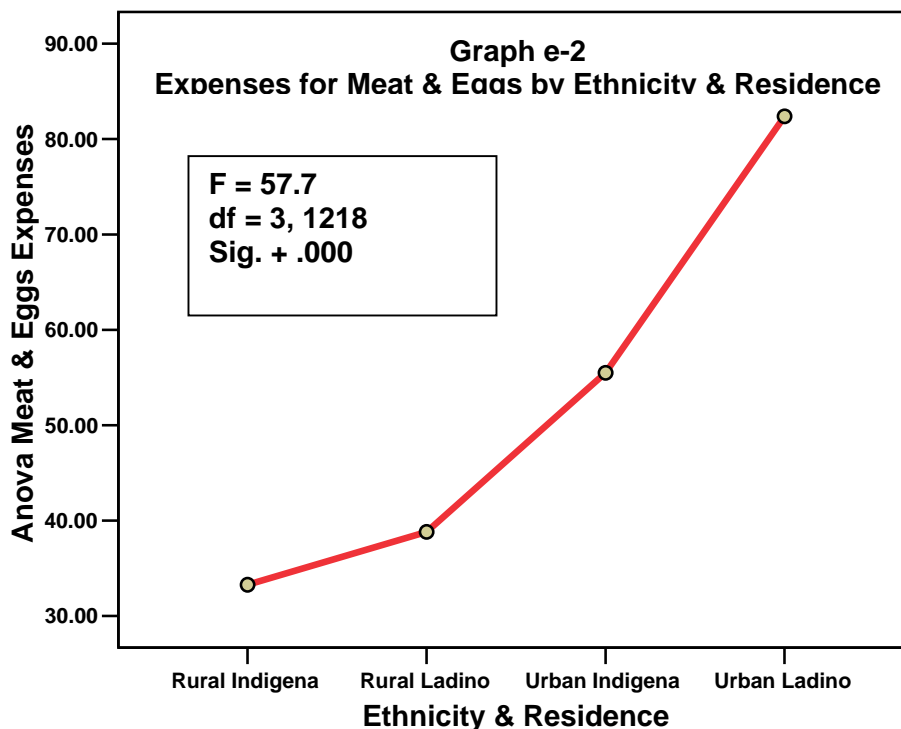
b The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c Type 1/Type 2 Error Seriousness Ratio = 100.

sample. It further shows significant differences between and among all residence and ethnic groups, although the greatest mean differences are between urban ladinos and all other groups about +96 between the indigenous urban population.

All the individual product categories (basic grains, vegetables, meats and eggs, milk products, pastas, beverages, alcohol and tobacco, tubers) parallel graph e-1 (see Expense Appendix). Interesting exceptions include expenses for pastas (noodles and related) in which the urban indigenous sample spends significantly more than any other group; and alcoholic beverages and tobacco in which both indigenous samples spend less than their urban counterparts.

Because of relatively high per-unit-cost, pasta may be a substitute for meat in the urban area, although the ANOVA data and graph for meats and eggs show the same pattern (graph e-2).



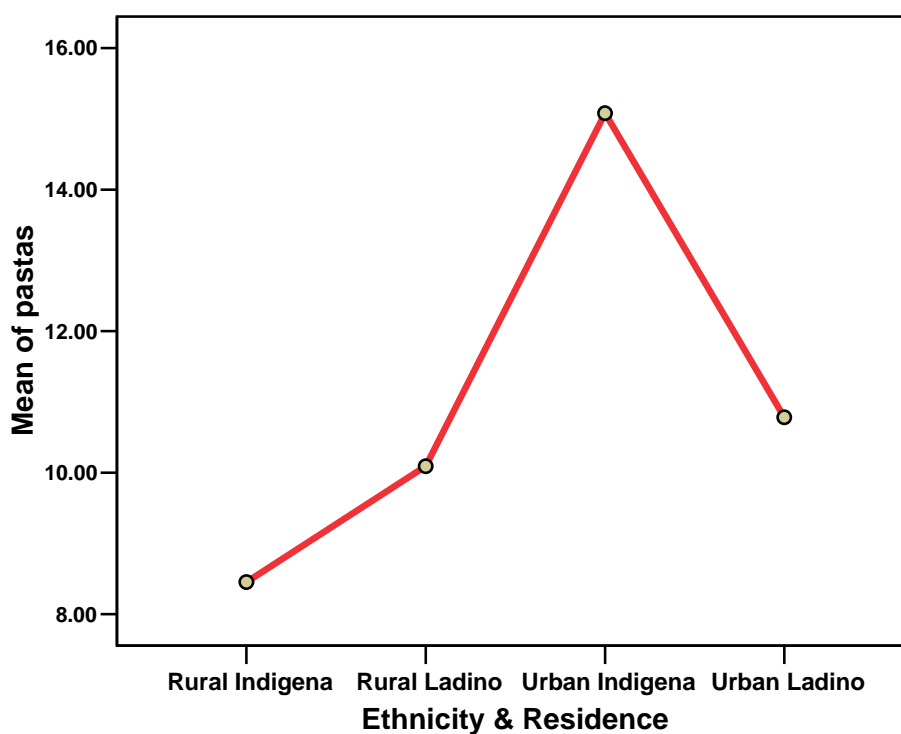


### Total Meats & Eggs (cont'd)

Waller-Duncan

Ethnicity & Residence	N	Subset for alpha = .05		
		1	2	3
Rural Indigena	774	33.2610		
Rural Ladino	155	38.8006		
Urban Indigena	204		55.4917	
Urban Ladino	89			82.3787

**Graph e-3**  
Expenditures for Meats & Eggs by Ethnicity and Residence

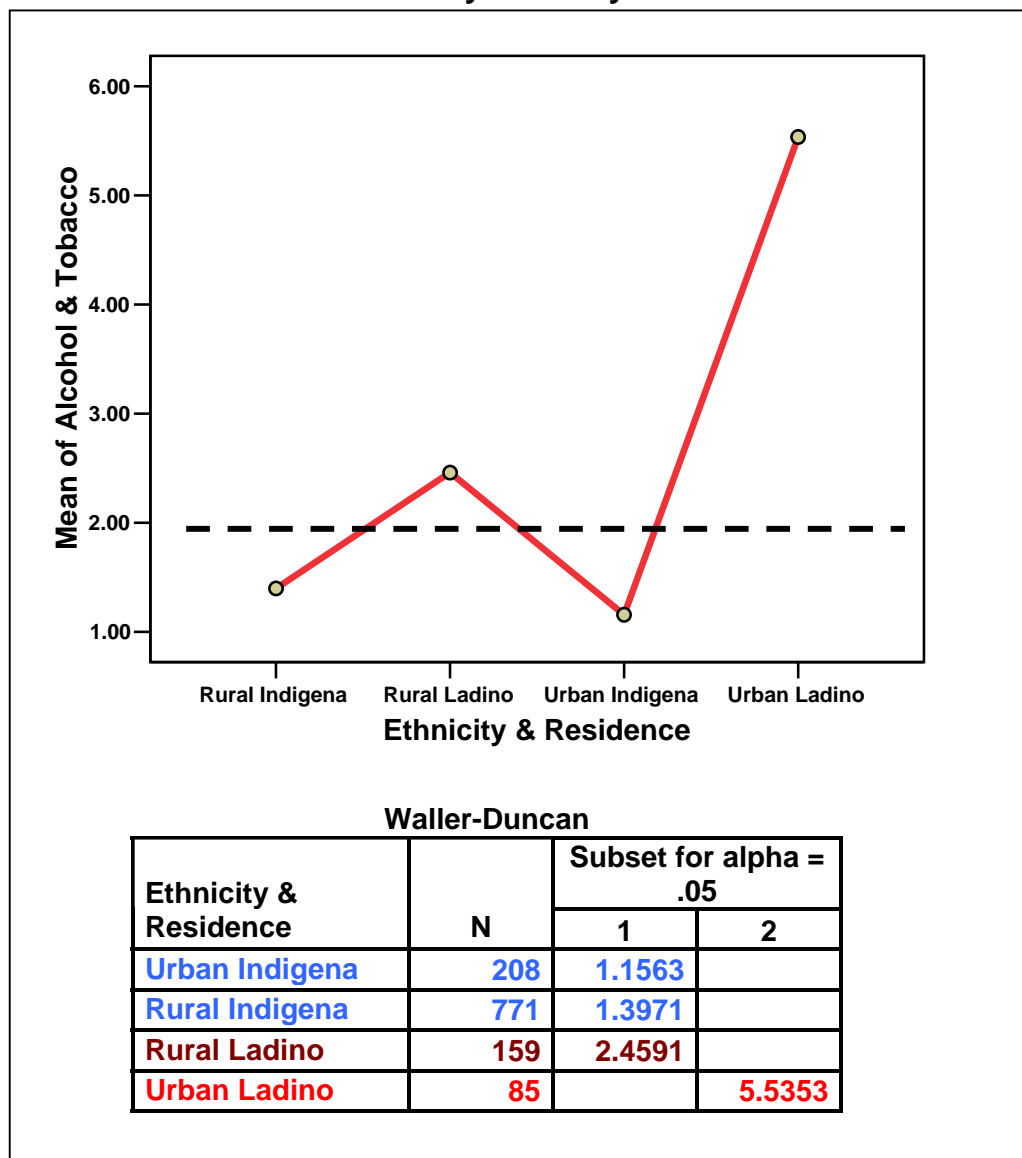


Waller-Duncan

Ethnicity & Residence	N	Subset for alpha = .05	
		1	2
Rural Indigena	771	8.4542	
Rural Ladino	157	10.0914	10.0914
Urban Ladino	85	10.7824	10.7824
Urban Indigena	208		15.0796

The urban indigenous sample spends nearly twice that of the rural sample on pastas and related food items, and one-third more than urban ladinos.

**Chart g-4**  
**Alcohol & Tobacco by Ethnicity & Residence**



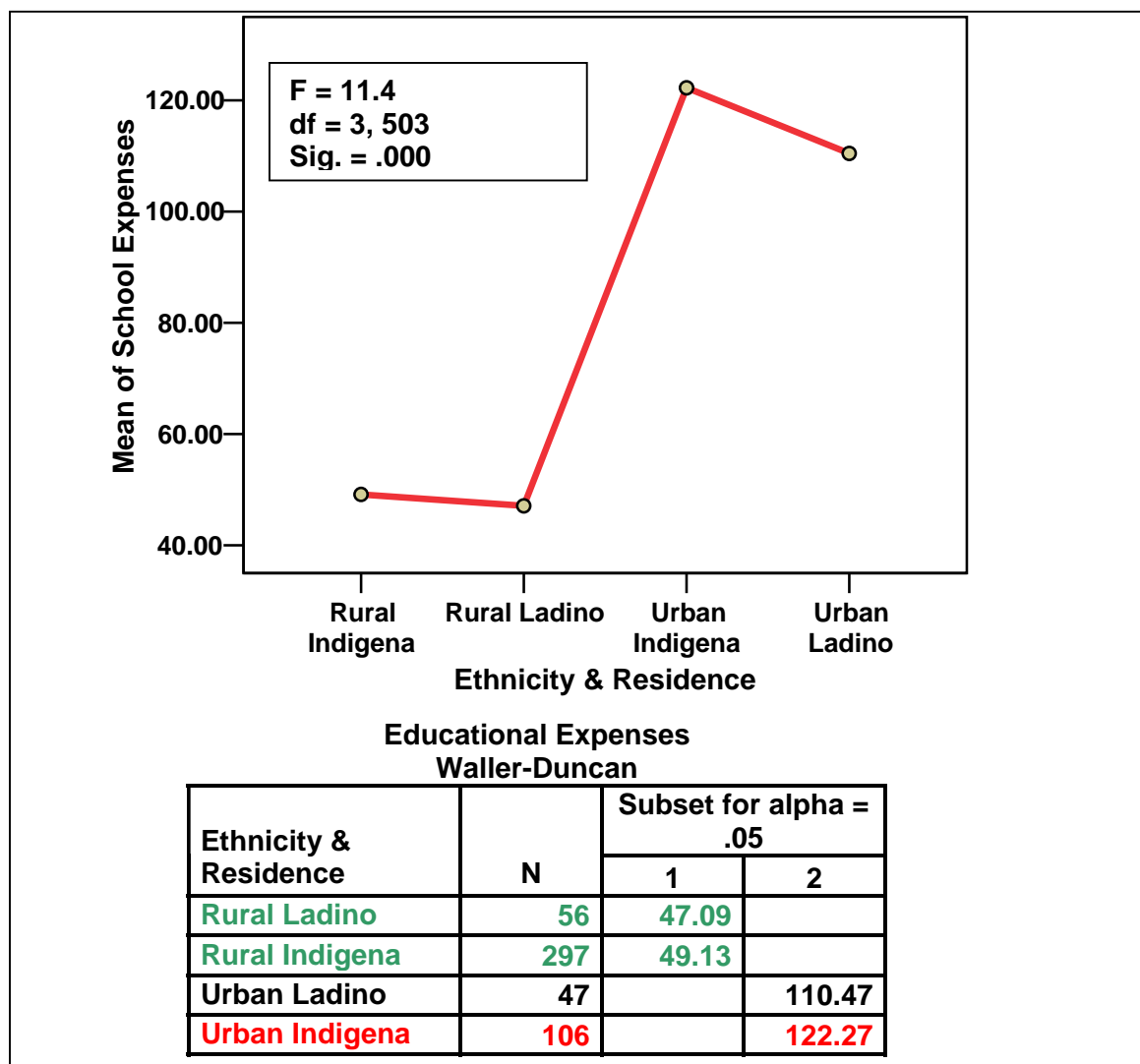
Urban ladinos spend almost as much per week on alcohol and tobacco as the other three groups together.

### Monthly Expenses

Monthly expenses do not present as contrasting a pattern as does food. Overall, urban ladinos spend more on all other expenses than do the other groups. Nevertheless, there are some contradictions.

Chart e-5 (below), indicates that the urban indigenous sample spends more than other groups on education. However the t-level between the urban ladinos and indigenous samples is not significant ( $t=.45$ ,  $sig.=.672$ )

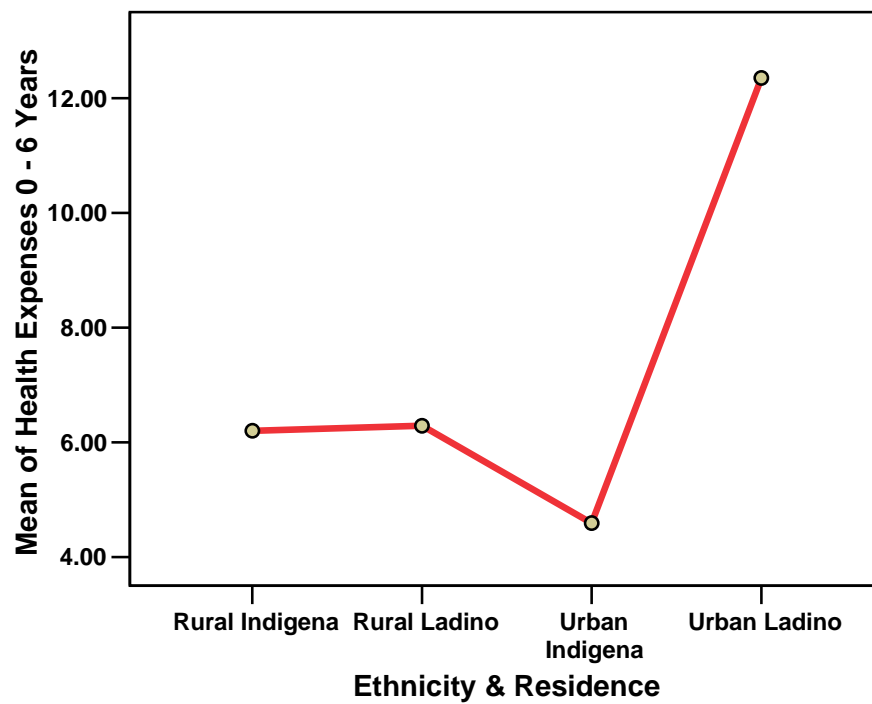
**Chart e-5**  
**Educational Expenses by Ethnicity and Residence**



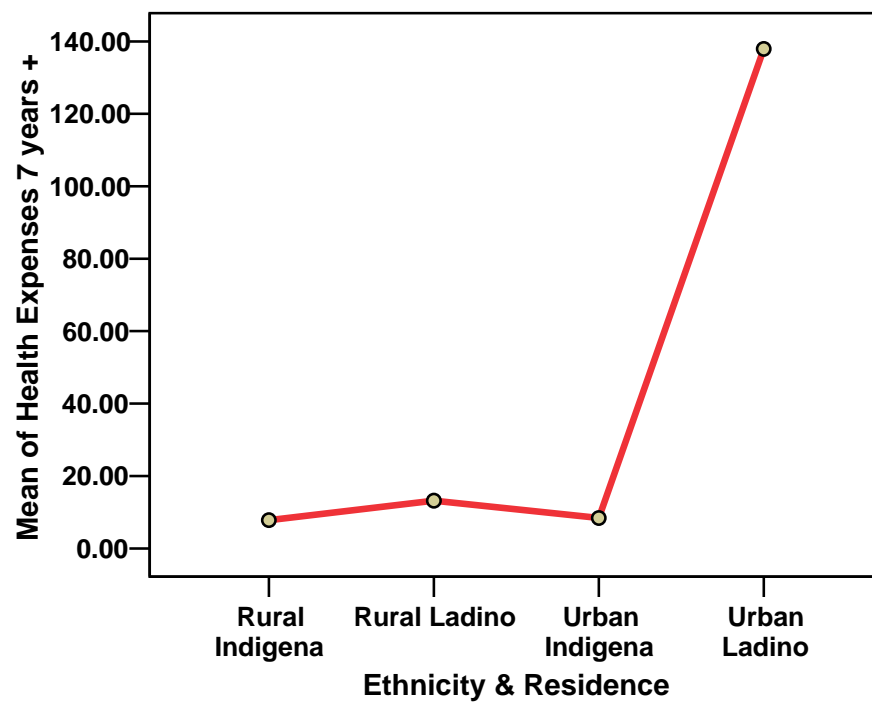
### Health Expenses

Both categories of health expenses -- Children 0-6 Years and people 7 years and over -- have parallel patterns, with urban ladinos outspending the other three groups by more than 3 to 1. Chart e-6 illustrates the differences using health expenses for children and Chart e-7 for those 7 years and older.

**Chart e-6**  
**Health Expenses 0-6 years by Ethnicity and Residence**

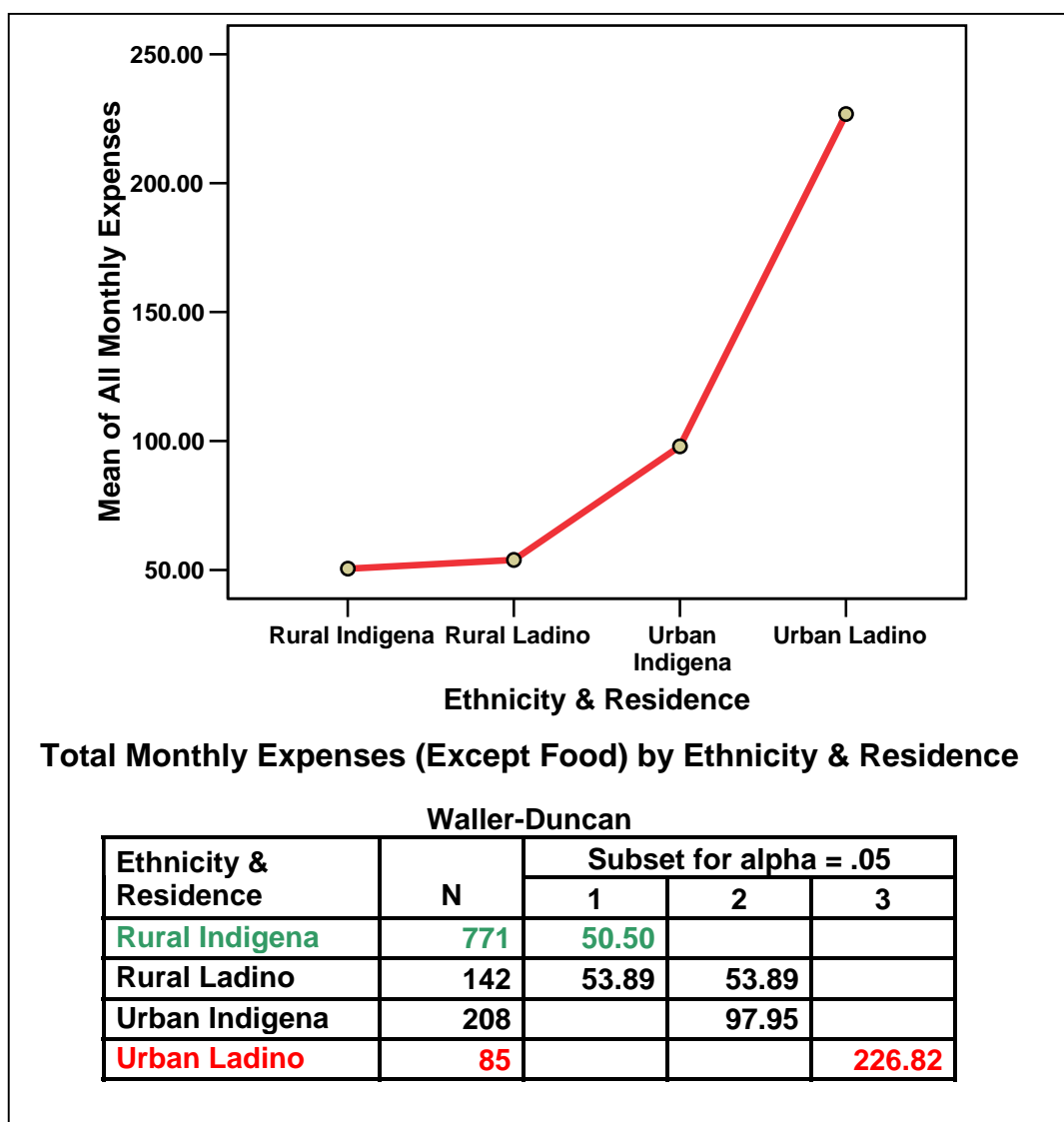


**Chart e-7**  
**Health Expenses 7 years plus by Ethnicity and Residence**



On the average, urban ladinos spend more than all other three groups together on a variety of monthly expenses, including health, education, house maintenance and personal expenses, and urban indigenous spend about twice that of the rural groups (Chart e-8).

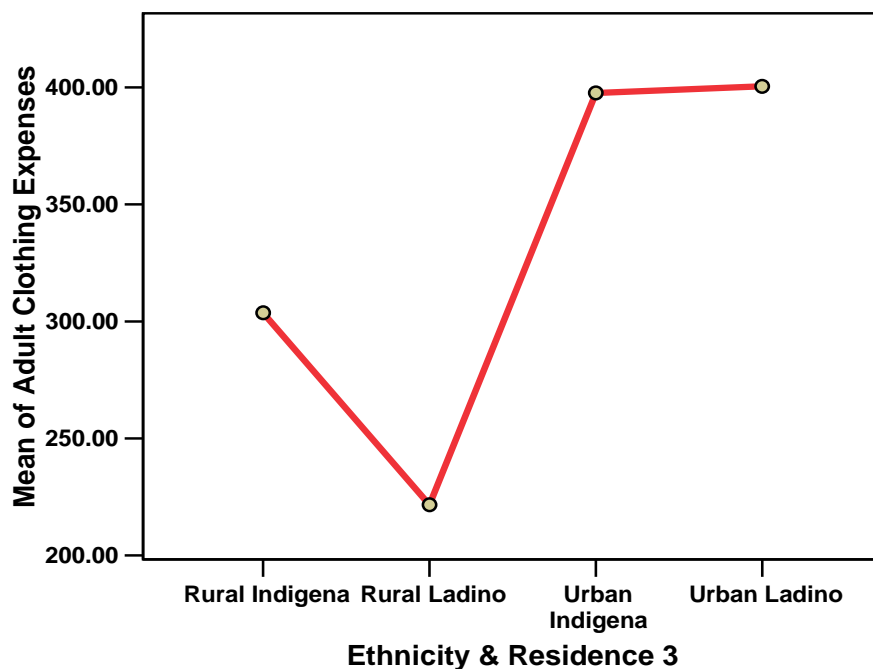
**Chart e-8**  
**Total Expenses (except Food) by Ethnicity and Residence**



### **Clothing – Measured on a Quarterly Basis**

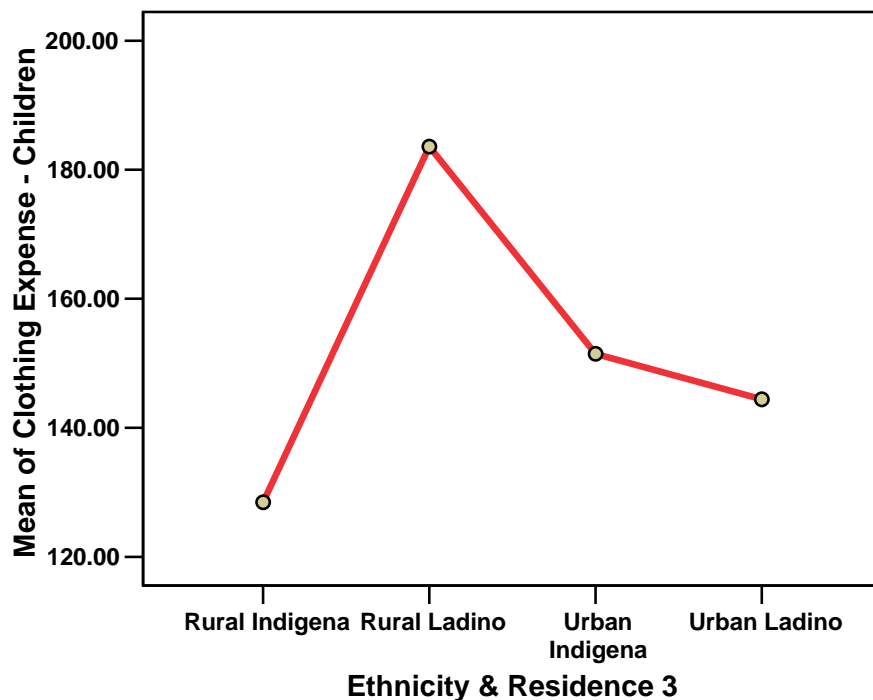
We measure clothing on a quarterly basis principally because in these communities, clothing generally is not part of a regular expense, but usually coincides with some event – birthday, local or national fiesta such as Easter or Christmas or the school year. The ANOVA F-values for both categories of clothing are not significant, although for adults the tendency is that urban dwellers spend more than their rural counterparts (Chart e-9).

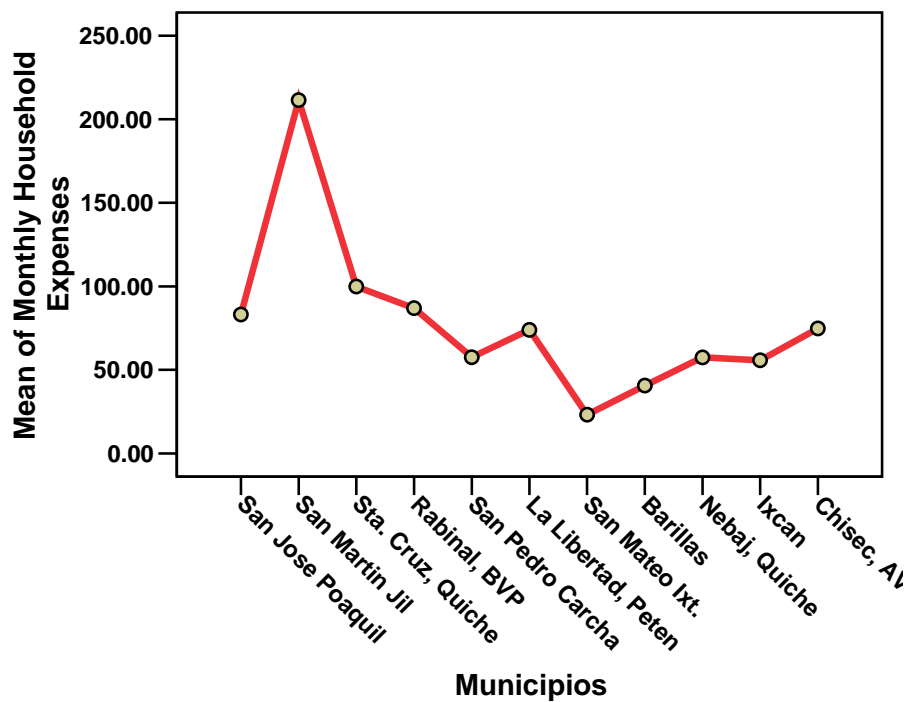
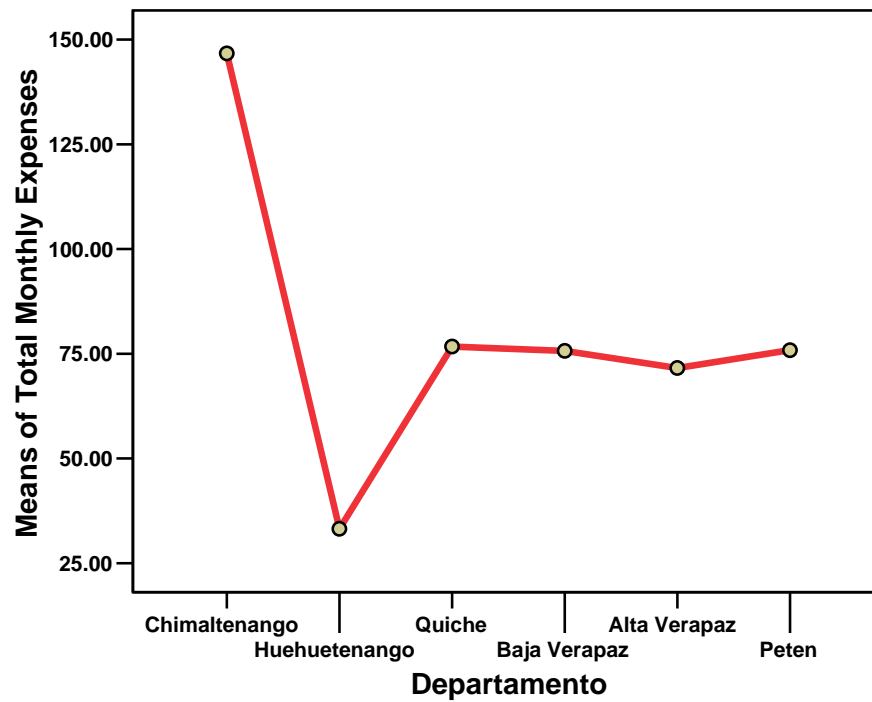
**Chart e-9**  
**Children's Clothing Expenses by Ethnicity and Residence**



However, for children, this data show that rural ladinos outspend all other groups. Again, F-levels are not significant (Chart e-10).

**Chart e-10**  
**Children's Clothing Expenses by Ethnicity and Residence**





## Conclusions – Household Expenses

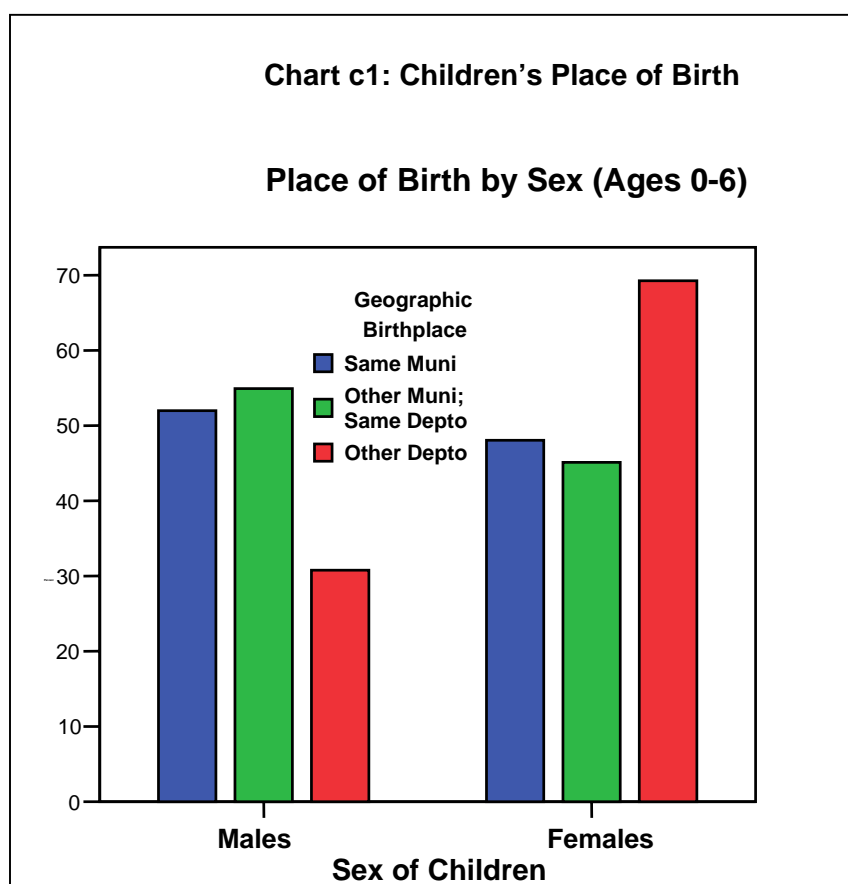
Although there are a few notable exceptions such as in food and clothing, urban ladinos overwhelmingly overspend all other groups. This is certainly not surprising given the basic differences in education, literacy and language skills.

Analysis by department and municipio do not provide any particular pattern. Although San Martín Jilotepeque and San José Poaquil are neighboring communities, their total monthly expenses show the widest differences of all the municipios, and the differences between Santa Cruz, Quiché and Nebaj are not statistically significant.

As is seen in other sections on economic and non-economic measures, this is a pattern that holds true throughout the study.

## Children 0 – 6 Years of Age

In this sample there are 1702 children ages 0 – 6 years, representing 835 households, or about 2.04 children under 6 per family. The majority were born in the same Department, if not in the same municipio of residence. Curiously, about 40% more girls than boys were born in other Departments, although there is no apparent reason for this (see migration data).

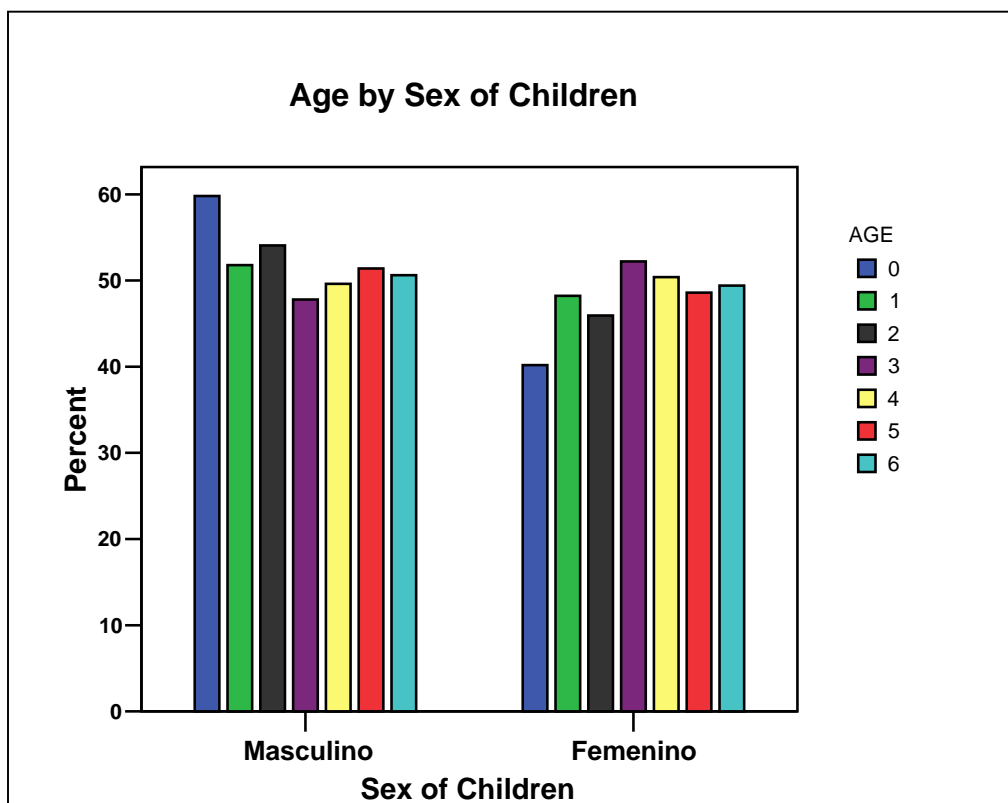


One question that resounds in the literature regarding Mayan populations is the relative “better treatment” of children according to sex. The data in this sample do not tend to support this idea,



although as can be seen in the following chart, there is a tendency for survival of more boys than girls in the 0 through 2 age groups. Nevertheless, as can be seen from the chi-square statistic, there is no significant difference between boys and girls and their ages.

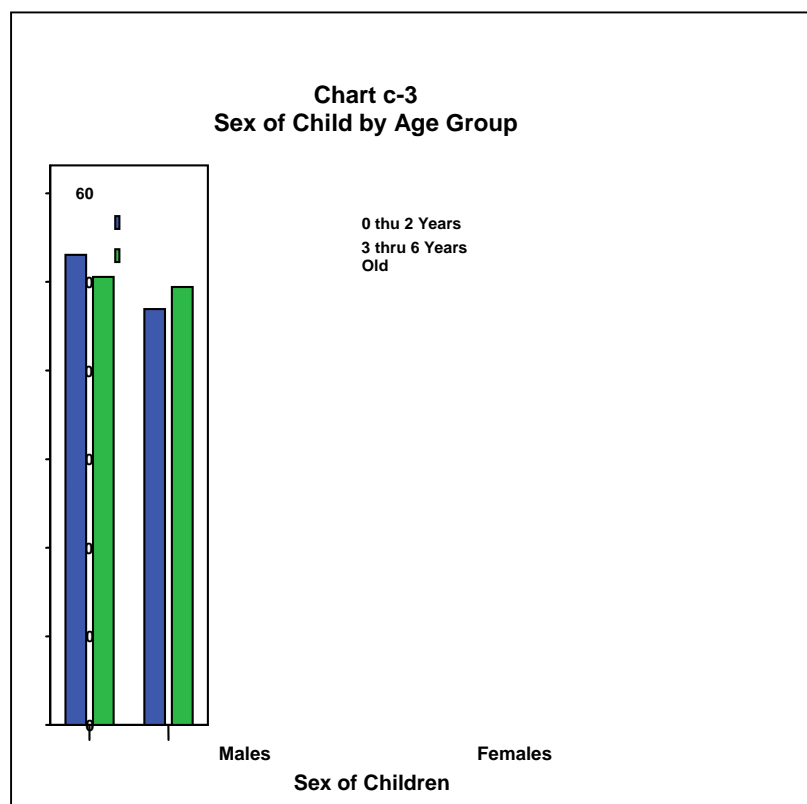
**Chart c-2 Age by Sex of Children**



## Chi-Square Tests

	Value	df	Sig. (2-sided)
Pearson Chi-Square	8.381	6	<b>.212</b>
Likelihood Ratio	8.423	6	.209
N of Valid Cases	1705		

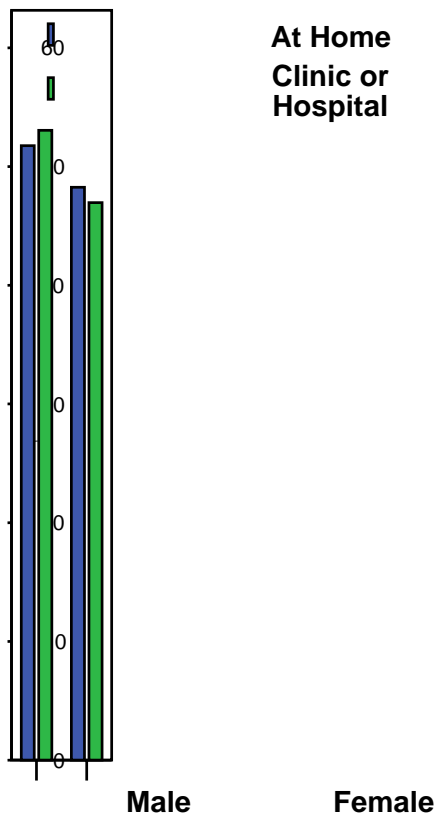
When the actual ages are reduced to groups of 0 – 2 and 3 and above, as in Chart c-3, below the apparent differences remain, but nevertheless are not statistically significant (chi-square = 3.06, sig. .165).



## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.05	1	.306		
Continuity Correction	.953	1	.329		
Likelihood Ratio	1.050	1	.306		
Fisher's Exact Test				<b>.308</b>	<b>.165</b>
N of Valid Cases	1705				

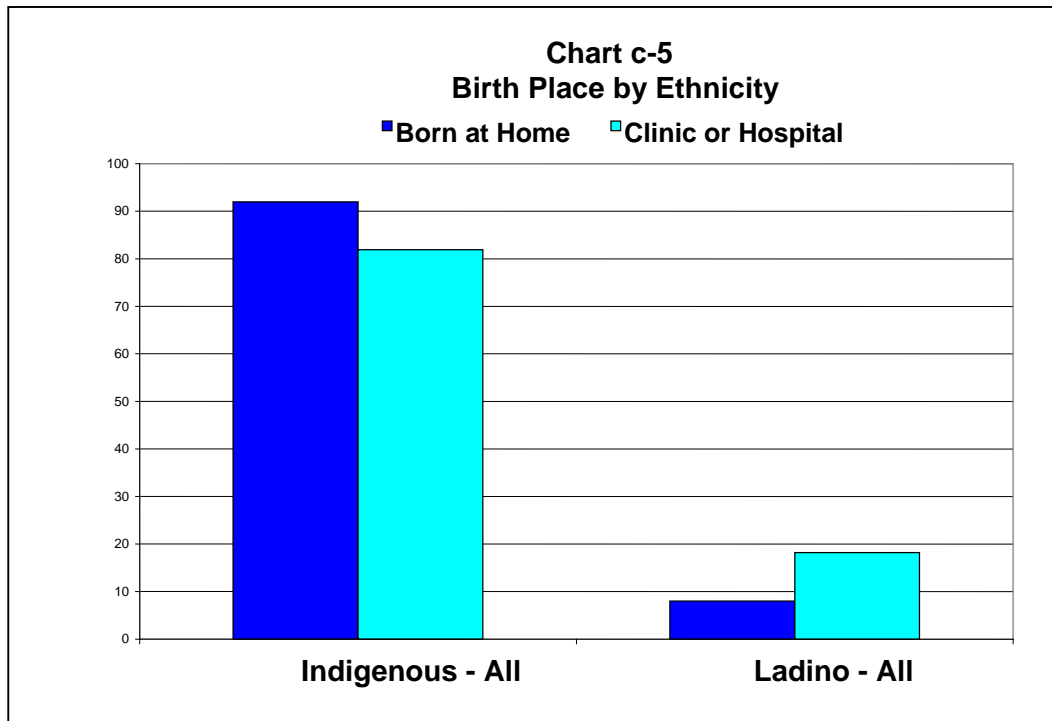
**Chart c-4: Place of Birth by Sex**  
**Where Birth Occurred by Sex (Ages 0-6)**

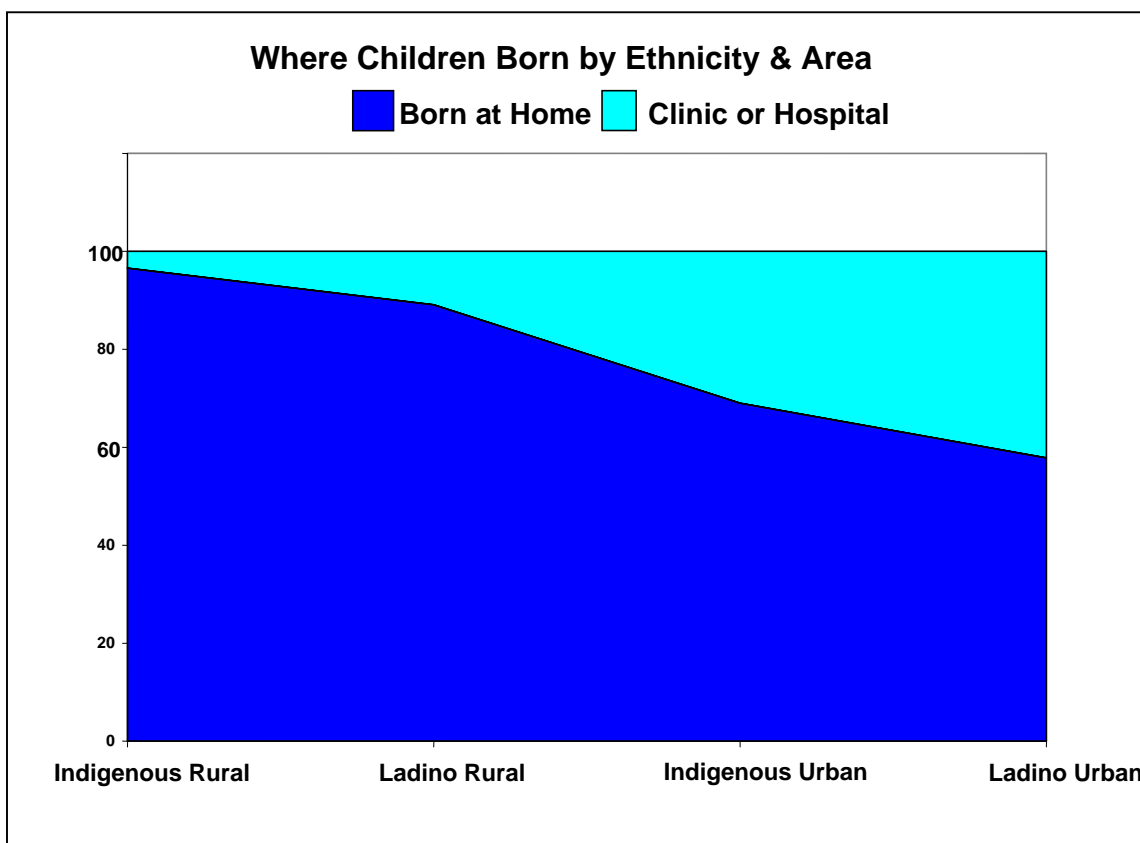


**Chi-Square Tests**

	Value	df	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.099	1		
Continuity Correction	.054	1		
Likelihood Ratio	.099	1		
Fisher's Exact Test			.805	<b>.408</b>
N of Valid Cases	1702			

Place of birth (at home or in a clinic or hospital) show no significant variation by sex of child, and rather is clearly more aptly defined by location of residence and ethnicity as seen in Charts c-5 and c-6 below.

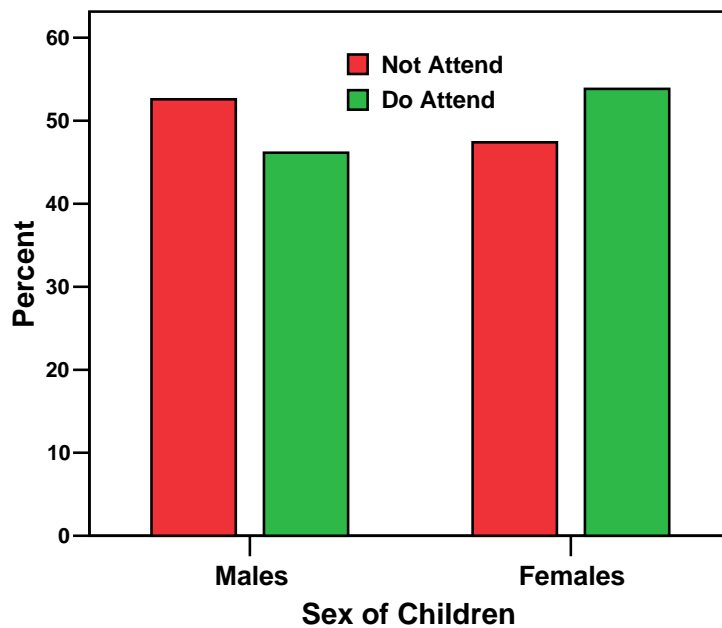




Finally there is the question if boys have an advantage over girls in terms of early educational opportunities. According to the data in this sample, this does not appear to be the case. In fact, it could be argued (statistically weakly) that the reverse is true (Chart c-7), chi-square = 2.7, sig. = .059. A slightly higher percentage of girl children over 3 years of age attend pre-school.

**Chart c-7**

### Pre-School Attendance by Sex



#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.701	1	.100		
Continuity Correction(a)	2.449	1	.118		
Fisher's Exact Test				.116	<b>.059</b>
N of Valid Cases	1705				

Reasons for non-attendance (excluding age) are displayed in Charts c-8 and c-9 on the following pages.

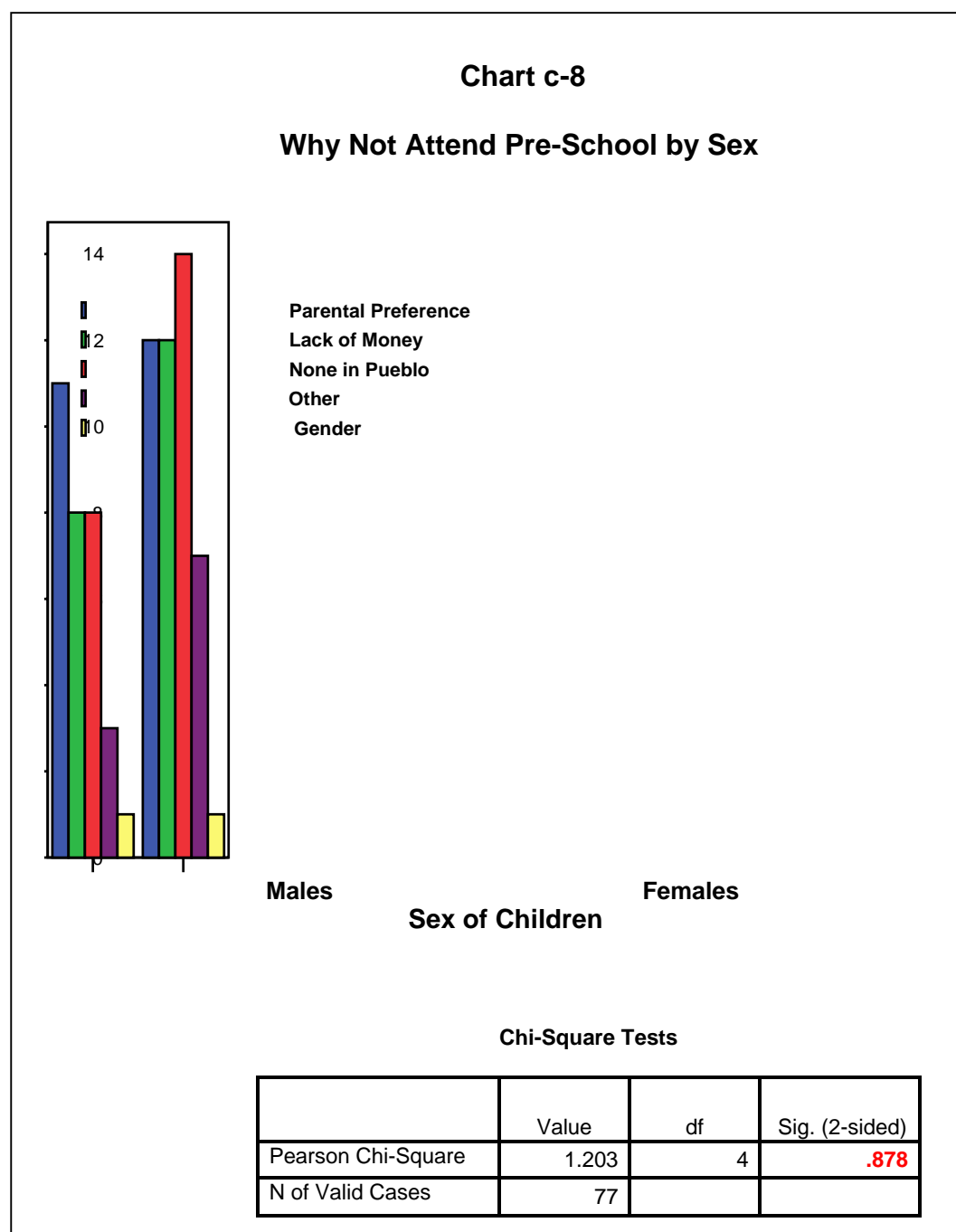
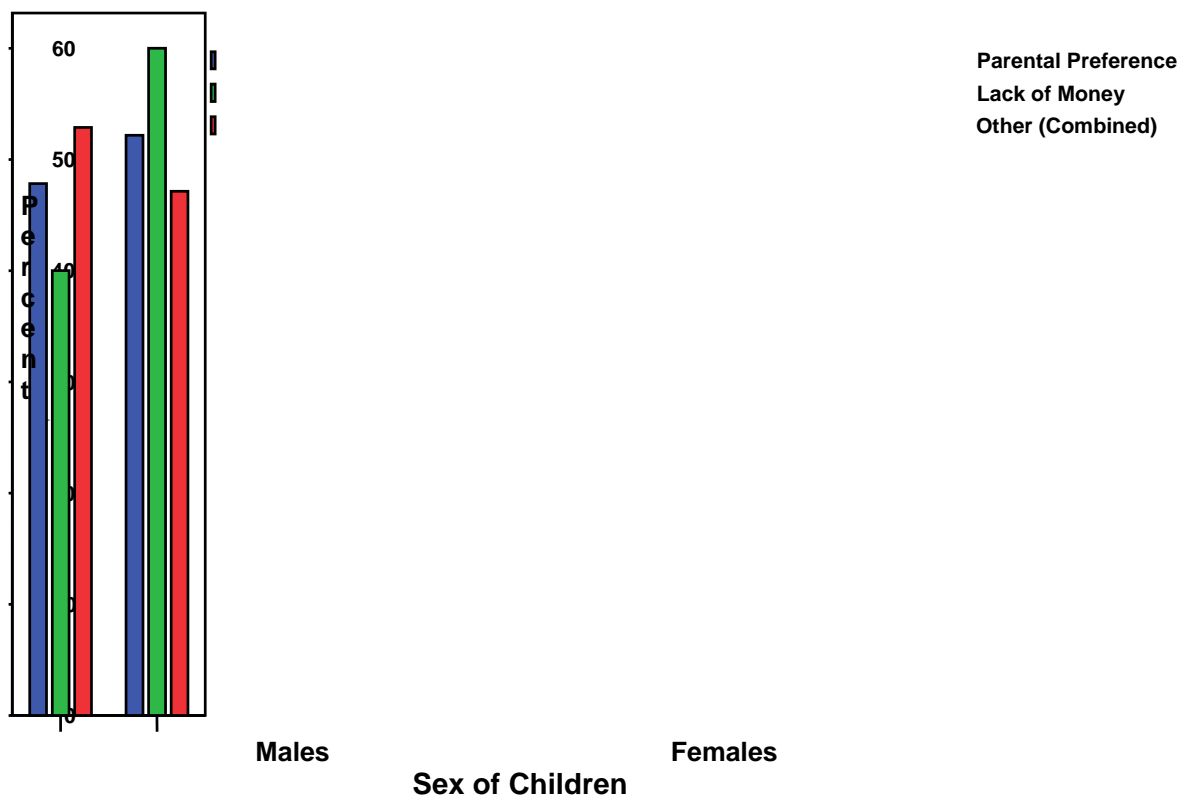


Chart c-8 might suggest that when the “reasons” for not sending girls to pre-school are “disguised” (e.g. lack of money or no school in the community and other). Nevertheless, when these are grouped as in Chart c-9, these reasons are visually less clear and, indeed, are not significant statistically (sig. = .451)

Chart c- 9

## Reason for Not Attending Pre-School



## Chi-Square Tests

	Value	df	Sig. (2-sided)
Pearson Chi-Square	2.638	3	.451
N of Valid Cases	1523		

Of course, the “reasons” people do or do not send their children from school are an artifact of the instrument. So, while not statistically significant, there seems to be at least a consistent tendency not to send girls to pre-school activities. The issue of “lack of money” may actually mean that there is money for boys but not for girls, for example. Similarly, the “no school in the community” reason should be roughly the same for both boys and girls rather than heavily weighted to the girls.



### Paid Child Labor

Less than 1% (9 of 1439) of children between the ages of 7 and 12 are employed for wages. These children are employed in agriculture and domestic services and 6 have attended or currently attend school.

**Educational Status of Working Children**

	Frequency	Percent	Valid Percent	Cumulative Percent
Never	2	.2	22.2	22.2
1 Primary	3	.2	33.3	55.6
2 Primary	3	.2	33.3	88.9
6 Primary	1	.1	11.1	100.0
<b>Total</b>	<b>9</b>	<b>.7</b>	100.0	
<b>Total = 1439</b>				

Of these children 6 are male and 3 female. They work an average of 4.5 days per week (2 days – 6 days) and earn an average of about Q13 (US\$1.64) per day work, although the wage variation very high, and female children earn about the same as their male counterparts.

**Daily Wage by Sex of Children 7-12**

		Sex		Total
		Male	Female	
Daily	4.00	1		1
Wages	5.50		1	1
	7.50	1		1
	10.00	2		2
	12.00	1		1
	15.00		1	1
	20.00		1	1
	30.00	1		1
<b>Total</b>		<b>6</b>	<b>3</b>	<b>9</b>

Paid child labor does not seem to be significant in this sample. It should be noted, nevertheless, that unpaid child labor was not systematically measured in any of the three year surveys.

### ***Education Ages 7 – 18 Years***

Social and family investments in education are critical for any household as well as for countries in the process of development. As noted in the household characteristics section, the average educational level attained for household heads is less than 2 years, and 51 percent are not literate in Spanish. Given the economic environment in Guatemala today, more an better education is one of the main keys to securing good employment as well as for national growth, productivity and socio-economic development.

In this section the basic parameters of education are described, including the varying effects of sex, residence and ethnicity.

Table e-1 and Graph e-2 present levels of school achievement by sex. As can be seen, although girls seem to have a later start, or simply do not become enrolled, by the middle of primary school (3<sup>rd</sup> grade), they maintain the same level of achievement as boys, although the absolute number dwindle considerably at the higher grades for all children in this age group.

Nevertheless, the overall mean of educational level for this group is only 2.6 years (s.d =2.6) and the mean age is 12 years (s.d = 3.4). In other words, at this point in time, this cadre of young people have about the same educational level as their parents.

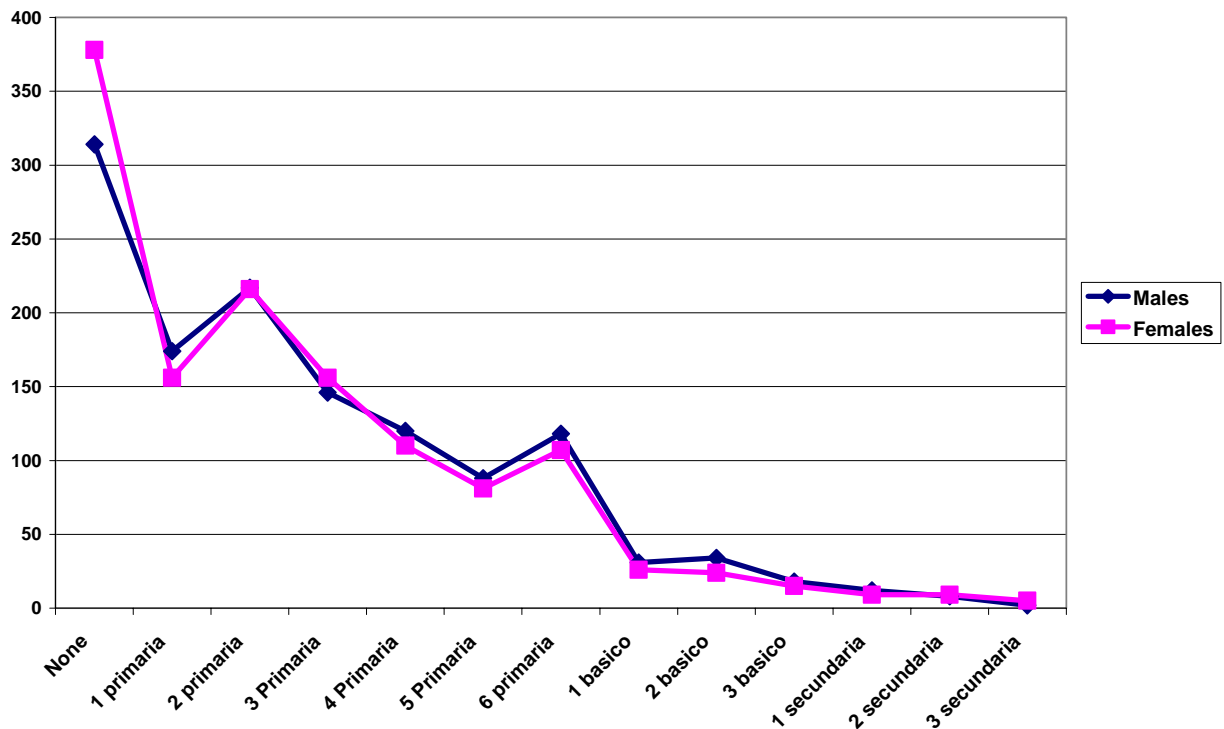
**Table e-1 Educational Level with Sex**  
**Chi-square = 12.6 , not significant**

		Sex		Total
		Male	Female	
Level	Never Attended	314	378	692
	1 Primary	174	156	330
	2 Primary	217	216	433
	3 Primary	146	156	302
	4 Primary	120	110	230
	5 Primary	88	81	169
Drop out occurs after primary	6 Primary	118	107	225
	1 Basic	31	26	57
	2 Basic	34	24	58
	3 Basic	18	15	33
	1 Secondary	12	9	21
	2 Secondary	8	9	17
	3 Secondary	2	5	7
Total		1282	1292	2574

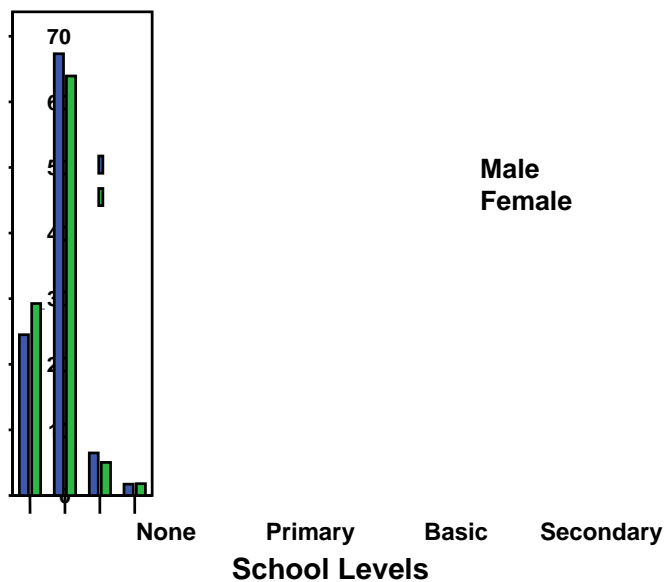
**27% of children between 7 and 18 years have never attended or never completed any school grade.**

There are significant drop out rates at the end of primary, but those who continue with “basic” studies tend to tail-off relatively slowly (both sexes), and there are more girl than boy ‘stayers’ through secondary school.

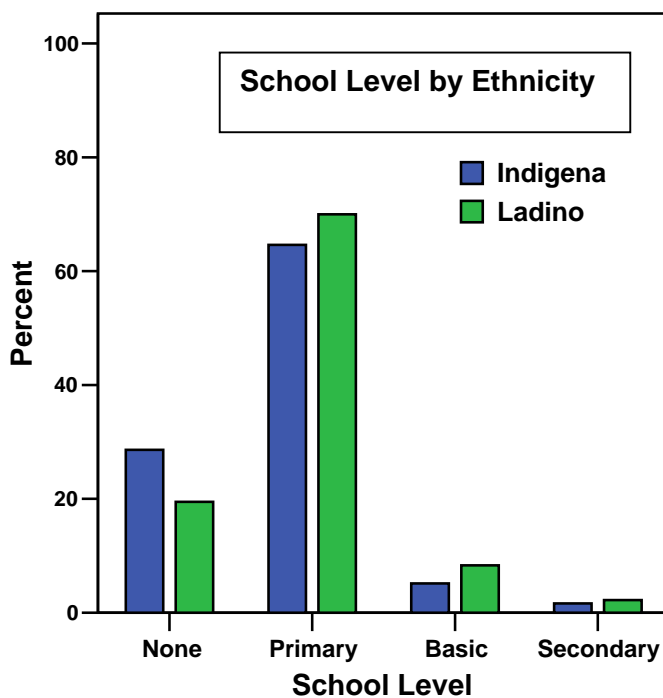
**Graph e-2: Educational Level by Sex**



Sex of children is an important aspect for parent in terms of decisions regarding initial school enrollment (sig. .03), however ethnicity (sig. .000) and residence area (sig. .000) have much greater influence. In fact, as can be seen in Graph 3c, a far higher percentage of children living in the rural areas do not enter school than for reasons that might be attributed to sex or ethnicity alone

**Graphs 3 a – 3c. School levels by Sex, Ethnicity and Residence****School Level by Sex**

**Graph 3-a**  
**Chi-square = 8.9**  
**df = 3**  
**sig. = .03**



**Graph 3- b**  
**Chi-square – 24.6**  
**df 6**  
**Sig. = .000**



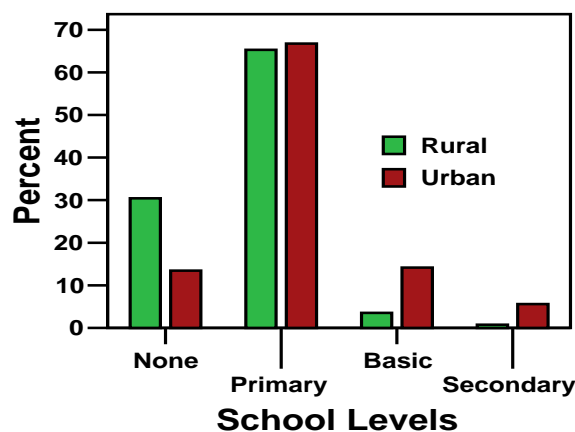
### Tables and Graphs 3-c School Level by Area

			Area		Total
			Rural	Urban	
School Level	None	Count	620	72	692
		% within School Level	89.6%	10.4%	100.0%
		% within Area	30.4%	13.4%	26.9%
	Primary	Count	1331	358	1689
		% within School Level	78.8%	21.2%	100.0%
		% within Area	65.3%	66.8%	65.6%
	Basic	Count	72	76	148
		% within School Level	48.6%	51.4%	100.0%
		% within Area	3.5%	14.2%	5.7%
	Secondary	Count	15	30	45
		% within School Level	33.3%	66.7%	100.0%
		% within Area	.7%	5.6%	1.7%
Total		Count	2038	536	2574
		% within School Level	79.2%	20.8%	100.0%
		% within Area	100.0%	100.0%	100.0%

#### Chi-Square Tests - Residence by School Level

	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	<b>186.721</b>	<b>3</b>	<b>.000</b>
N of Valid Cases	2574		

#### School Level by Area



Except for the primary level attendance, it is very clear that children of urban residents have a clear advantage over rural folks when it comes to educational opportunity for both entrance and continuation in school.

From these three graphs we can infer that while sex plays a role in parental decision-making regarding entry into the educational system, it is largely over-shadowed by reasons of ethnicity and residence patterns.

While these are inferential interpretations based principally on external independent variables, we also provide informants with a tested “menu” of responses we have found that generally are used to “explain why” children do not attend school. These tabulations and graphs follow.

**Table e-4**  
**Reasons for Not Attending School**

Valid Responses		Frequency	Valid Percent
	No School w/in 3Kms	31	4.9
	Financial	145	23.0
	Need to Work( Child)	199	31.5
	Lang / Culture	2	.3
	Gender	1	.2
	Disabled	13	2.1
	Child Doesn't Want	190	30.1
	Parents Doesn't Want	50	7.9
Valid	Total	631	100.0
	Total (NA)	1944	
Total of all children 7- 18 Years		2575	

As can be seen from Table e-4, the principal reasons stated for non-attendance are:

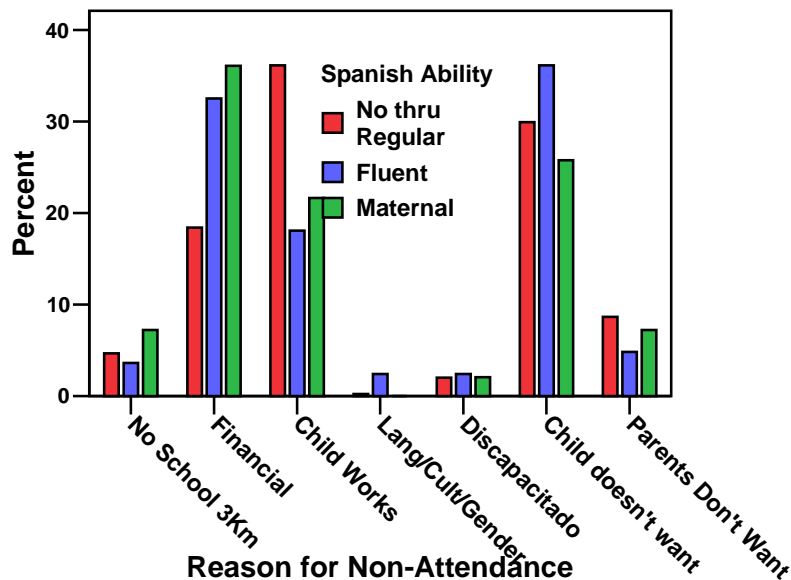
1. Child must work 32%
2. Child does not want to attend 30%
3. Financial reasons 23%

These are fairly facile and culturally acceptable reasons and in some cases, probably mask other underlying reasons. Note that only 3 informants listed language, culture or gender as reasons for not sending their children to school. This seems to contrast significantly with information regarding the Department of Quiché where donors have invested a considerable amount of money and time in the development of bi-lingual education programs in response to this perceived need.

The following graphs pursue reasons relating to language and culture as more underlying reasons for lack of school attendance along with the externalities of residence, sex and ethnicity.

### Graphs e-5a through e-5c Non-Attendance and Language Skills

#### Non-Attendance by Language Skills



#### Graph and Table e-5a

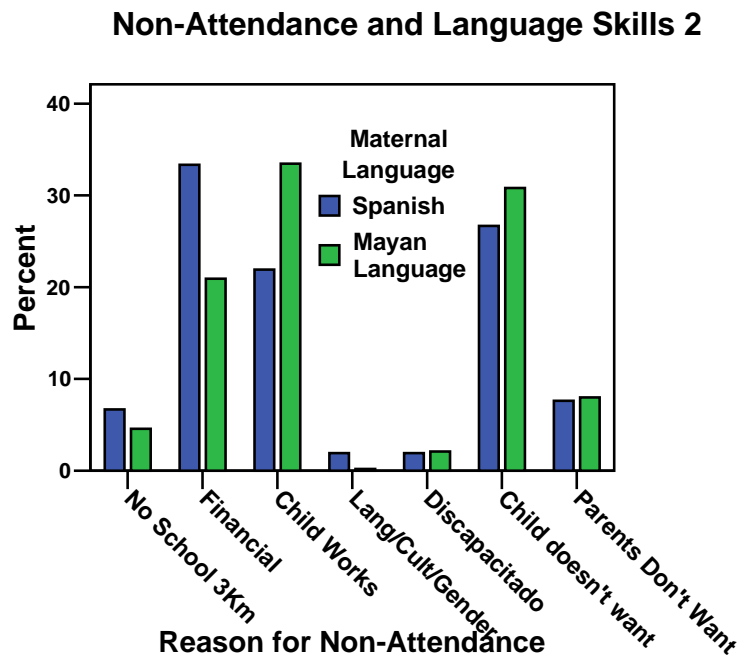
Spanish ability is clearly a part of nearly all reasons given for not attending school. Clearly some of this is due to the relative poverty of non-Spanish speakers, but it may play a part in both the child and his parents' decisions to attend, especially when the weight of the child's decision is as strong as this graph suggests.

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	<b>37.500</b>	<b>12</b>	<b>.000</b>
<b>Likelihood Ratio</b>	<b>34.842</b>	<b>12</b>	<b>.000</b>
<b>N of Valid Cases</b>	<b>631</b>		



Graph e-5b



Graph e-5b

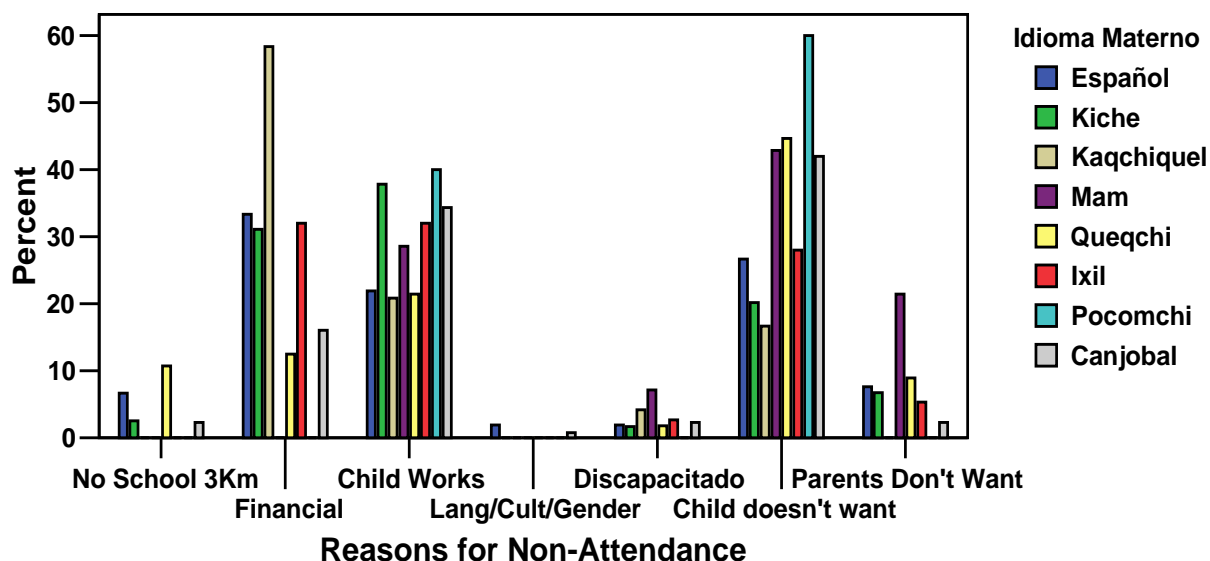
The relationship is similar but not as strong when maternal languages (Spanish vs. all Mayan grouped) is reviewed.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.309	6	.012
Likelihood Ratio	14.356	6	.026
N of Valid Cases	631		

Graph e5-c

## Reason for Non-Attendance by Maternal Language

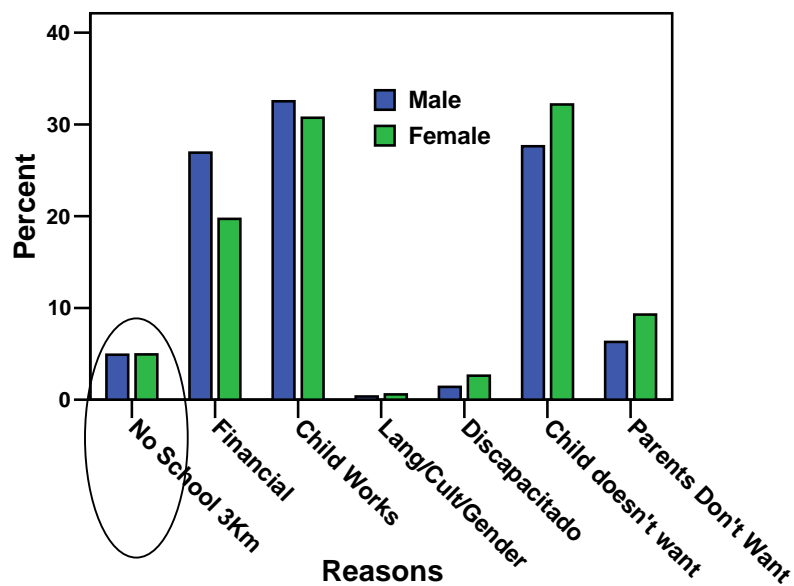


The above graph e-5c reviews the principal mayan languages in the sample with reasons for not attending school. Two language groups stand out in this graph – Kaqchiquel and Pocomchi – the former for financial reasons and the latter with the child not wanting to attend. Kiche' speakers, where considerable investment in bi-lingual education have been made, show a relatively low percentage of non-attenders where children don't want to attend, yet are high under the categories of "child" must work and "financial".<sup>7</sup>

Graphs e6-a through c on the following pages examine non-attendance by sex, area and ethnicity. Of these three variables, only ethnicity is statistically significant (.015).

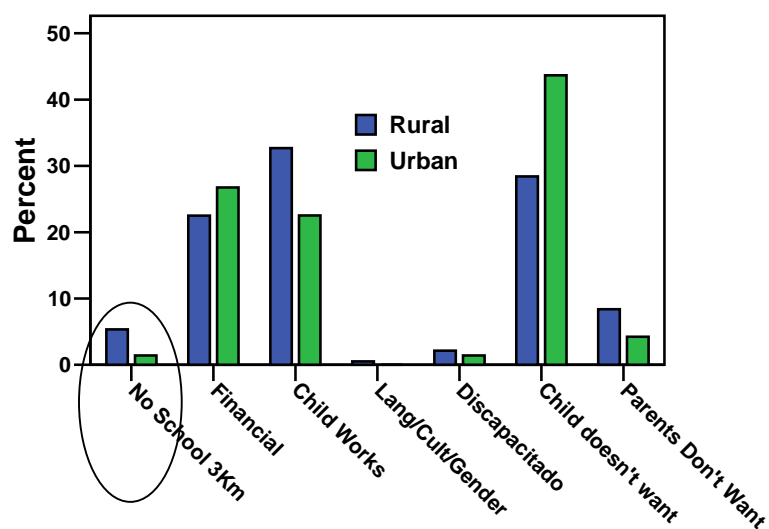
<sup>7</sup> The categories are mutually exclusive (one per informant) so that "child must work" and "financial" are "instrument artifacts" or "etic" categories as opposed to spontaneous or "emic" categories. Undoubtedly they fall in the same domain.

### Non-Attendance & Sex



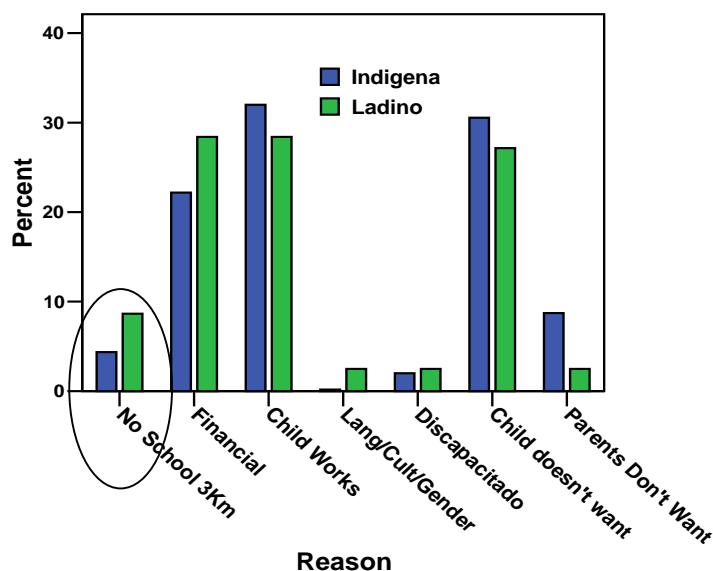
Chi-square = 7.8  
df = 6  
Sig. = .252 – (NS)

### Reason for Non-Attendance by Area



Chi-square = 11.4  
Df = 6  
Sig. = .08 (NS)

Reason for Non-Attendance by Ethnicity



Chi-square = 15.7

Df = 6

Sig. = .015

Crosstab

			Ethnicity		Total
			Mayan	Ladino	
Reasons for Non-Attendance	No School 3Km	Count	24	7	31
		% within Reasons	77.4%	22.6%	100.0%
		% within Ethnicity	4.4%	8.6%	4.9%
	Financial	Count	122	23	145
		% within Reasons	84.1%	15.9%	100.0%
		% within Ethnicity	22.2%	28.4%	23.0%
	Child Works	Count	176	23	199
		% within Reasons	88.4%	11.6%	100.0%
		% within Ethnicity	32.0%	28.4%	31.5%
	Lang/Cult/Gender	Count	1	2	3
		% within Reasons	33.3%	66.7%	100.0%
		% within Ethnicity	.2%	2.5%	.5%
	Disabled (all disabilities)	Count	11	2	13
		% within Reasons	84.6%	15.4%	100.0%
		% within Ethnicity	2.0%	2.5%	2.1%

			Ethnicity		Total
			Mayan	Ladino	
	Child doesn't want to attend	Count	168	22	190
		% within Reasons	88.4%	11.6%	100.0%
		% within Ethnicity	30.5%	27.2%	30.1%
	Parents Don't Want	Count	48	2	50
		% within Reasons	96.0%	4.0%	100.0%
		% within Ethnicity	8.7%	2.5%	7.9%
Total		Count	550	81	631
		% within Reasons	87.2%	12.8%	100.0%
		% within Ethnicity	100.0%	100.0%	100.0%

One of the interesting non-statistical relationship that can be visually teased from the data is the relationship between “no school within 3 kms” of the residence area. Sex has no effect on the response, residence area obviously has more rural non-attenders but ethnicity shows a positive relationship with non-attendance in general, but within non-attenders, there is a greater percentage of ladinos than Mayans. If this is more than a sampling anomaly (it only represents 5% of the non-attenders), it could be interpreted as a trend towards education on the part of rural mayans in this population. Nevertheless, when the size of these individual cells are considered it is clearly premature to do more than to keep this as a possible hypothesis requiring further investigation.

## Conclusions Regarding Education

Enrollment and continuation on school yields the following basic information:

1. Overall, 27% of children never attend school.
2. Girls are less likely to be enrolled in school than boys.
3. Once in school, both sexes continue (or discontinue) at about the same rate.
4. School discontinuation is highest after completion of primary school.
5. Language seems to present “hidden” barriers to attendance and continuation, although these are probably “masked” behind economic or other reasons especially children “not wanting to attend school”. Quiché, with its experiments in bi-lingual education, may run contrary to this general observation.
6. Ladinos, on the whole, are more likely to attend and continue in school than Mayans.
7. Distance to educational facilities is a general impediment to education and does not seem to depend on sex, although there is a slight tendency for more mayans than ladinos to pursue an education even given the obstacles of distance.

## Social and Physical Access

Access to services in general is often an issue cited as an impediment to family well-being. We have discussed access to educational facilities in some detail. In this section we briefly present three variables directly related to accessibility of services or resources: Language; Distance; and its correlate, Time.

For the Mayan population, language is a critical issue in terms of social participation and service access. As can be seen from Table s-1 below, over 25% indicate that they do not have access to services in their own language. This includes market places and the municipal authorities

(14% each), educational services (40%) and health services (30%). For health services alone, 48% say they do not have access in their maternal language (the highest language vs. service contrast in the matrix), and 35% say the same about educational facilities.

### Important Locations vs. "People there speak in my (maternal) language"

			People there Speak "My Language"		Total
			No	Yes	
Important Places for Services	Markets - Buy and Sell	Count	259	1661	1920
		% within Place	13.5%	86.5%	100.0%
		% within "My Language"	10.9%	25.3%	21.5%
	Civil Affairs (Municipal Center)	Count	151	957	1108
		% within Place	13.6%	86.4%	100.0%
		% within "My Language"	6.4%	14.6%	12.4%
	Education (Primary, Basic & Secondary)	Count	820	1244	2064
		% within Place	39.7%	60.3%	100.0%
		% within "My Language"	34.6%	19.0%	23.1%
	Health (Both Public & Private Facilities & Doctors)	Count	1139	2699	3838
		% within Place	29.7%	70.3%	100.0%
		% within "My Language"	48.1%	41.1%	43.0%
Total		Count	2369	6561	8930
		% within Place	26.5%	73.5%	100.0%

The statistical significance of this is very high as seen below.

#### Chi-Square Tests Place & Language

	Value	df	Sig. (2-sided)
Pearson Chi-Square	466.116(a)	3	.000
Likelihood Ratio	489.494	3	.000
Linear-by-Linear Association	240.073	1	.000

N of Valid Cases	8930		
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About 75% of the sample has physical access to all locations within about an hour of travel time, regardless of the mode of travel (walking, bicycle, car, bus). This is statistically significant at the .000 level. Services with the highest time requirements are the municipal authorities (or civil affairs), and health services.

Recode of Locations to Kinds of Places \* Time Categories Cross tabulation

			Time Categories				Total
			1/2 Hour or Less	1/2 to 1 Hour	Up to 1/2 Day	More than 1/2 Day	
Locations	Econ	Count	1256	200	458	11	1925
		% within Places	65.2%	10.4%	23.8%	.6%	100.0%
		% within Time Categories	21.4%	23.2%	21.9%	8.1%	21.5%
	Civil Affairs	Count	596	113	378	19	1106
		% within Places	53.9%	10.2%	34.2%	1.7%	100.0%
		% within Time Categories	10.1%	13.1%	18.1%	14.0%	12.3%
	Education	Count	1732	125	242	1	2100
		% within Places	82.5%	6.0%	11.5%	.0%	100.0%
		% within Time Categories	29.5%	14.5%	11.6%	.7%	23.4%
	Health	Count	2297	423	1014	105	3839
		% within Places	59.8%	11.0%	26.4%	2.7%	100.0%
		% within Time Categories	39.1%	49.1%	48.5%	77.2%	42.8%
Total		Count	5881	861	2092	136	8970
		% within Places	65.6%	9.6%	23.3%	1.5%	100.0%
		% within Time Categories	100.0%	100.0%	100.0%	100.0%	100.0%

Distance and time are usually, but not always, highly correlated. The following table show distances to the same facilities.

Recode of Locations To Kinds of Places \* Distance Cross tabulation

		Distance					Total
		"Very Close"	De 0 a 1 Km	De 1 a 2 Km	De 2 a 3 Km	De 3 a más	

Generic Places	Markets (buy and sell)	Count	86	544	172	87	1046	1935
		% within Places	4.4%	28.1%	8.9%	4.5%	54.1%	100.0%
		% within Distance	18.1%	18.8%	26.1%	29.1%	22.2%	21.4%
	Civil Affairs	Count	41	246	66	24	735	1112
		% within Places	3.7%	22.1%	5.9%	2.2%	66.1%	100.0%
		% within Distance	8.6%	8.5%	10.0%	8.0%	15.6%	12.3%
	Education	Count	188	1079	179	72	619	2137
		% within Places	8.8%	50.5%	8.4%	3.4%	29.0%	100.0%
		% within Distance	39.7%	37.3%	27.2%	24.1%	13.1%	23.6%
	Health	Count	159	1025	242	116	2310	3852
		% within Places	4.1%	26.6%	6.3%	3.0%	60.0%	100.0%
		% within Distance	33.5%	35.4%	36.7%	38.8%	49.0%	42.6%
Total		Count	474	2894	659	299	4710	9036
		% within Places	5.2%	32.0%	7.3%	3.3%	52.1%	100.0%

## Chi-Square Tests

	Value	df	Sig. (2-sided)
Pearson Chi-Square	714.716	12	.000
Likelihood Ratio	716.708	12	.000
Linear-by-Linear Association	.046	1	.830
N of Valid Cases	9036		

For all cases, 52% must travel more than 3 kms (regardless of means of transport) to reach these services. The majority (60%) must travel at least that distance for health services.

## Conclusions Regarding Physical and Social Access

This sample (predominantly rural – regardless of our internal urban-rural definitions -- ), lives at considerable physical distance from basic services, including markets, but the time required to travel to these services is relatively moderate, 65% of the population can reach these services in less than 30 minutes, and 75% within one hour.

Social access is difficult for about 27% of the population due to language issues.

The implication for planners is confounded by at least two major factors. The first is the on-going national trend towards urbanization and the 'benefits' of city-living. This means that



regional planners have to focus on urban services, which will probably draw even more people from rural and distant areas (especially as the amount of productive land available to small-holders decreases (the issue of minifundia). Second, the relatively low levels of education in this population militate against people qualified to take employment in the service positions of health and education. With the overall population increasing, the absolute demand for education and health services increases concomitantly, yet there is a deficit of bi-lingual and reasonably educated and qualified people to occupy semi-professional and professional service positions.

These two issues present a dilemma for national and regional planners with limited budgets. Where and at what level of priority does one allocate resources? Short-term allocations in “isolated” areas are needed to address immediate problems of demand, yet the long term trends indicate that urban populations will continue to grow that create even greater pressure and demand for services in the larger towns and cities.

One possible approach to this is to encourage NGOs to address the immediate issues in the rural areas, while the lion’s share of public money takes on the longer view. The political feasibility of this, of course, is doubtful at all levels.

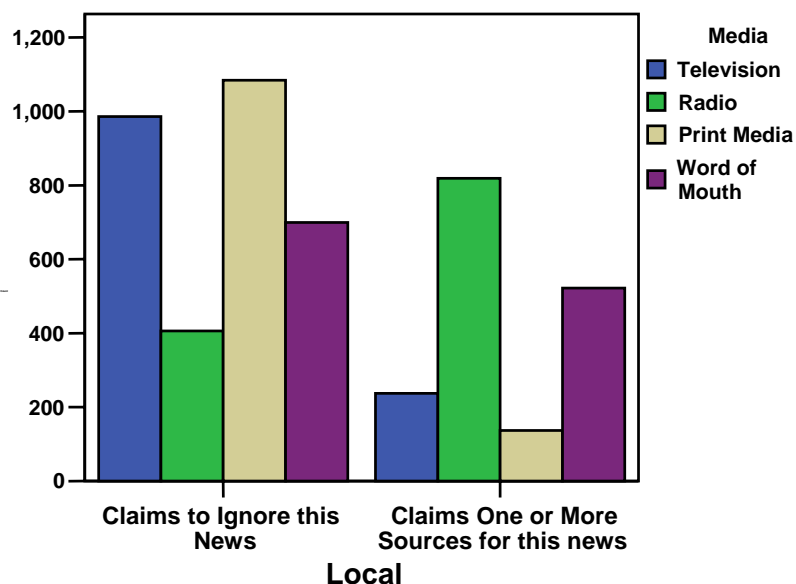
### ***Communication Media***

Awareness and understanding of environments and phenomena outside one’s immediate community is an important element in the development process. In the developing world this awareness – if not understanding – reached the ‘take-off’ point with the introduction cheap transistor radios in the late 1960s, and has increased geometrically with ‘affordable’ television and more recently the internet. In this sample, 28% of the households had a television (and 11% with cable) and 58% have radios. By comparison, data from a rural, predominantly indigenous community in 1969, showed that only about 5% had a radio in the household<sup>8</sup>, and of course there was no access to television.

This sample shows that while general access to communication facilities (either at home or in neighboring homes) is relatively high, attention to news from these sources is principally seen in the urban environments, and especially by urban ladinos.

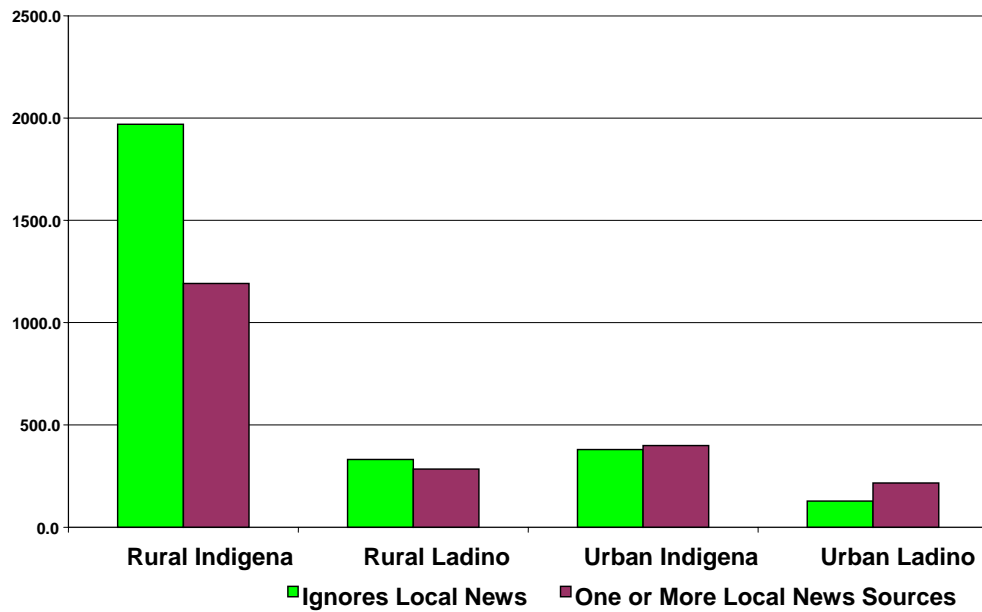
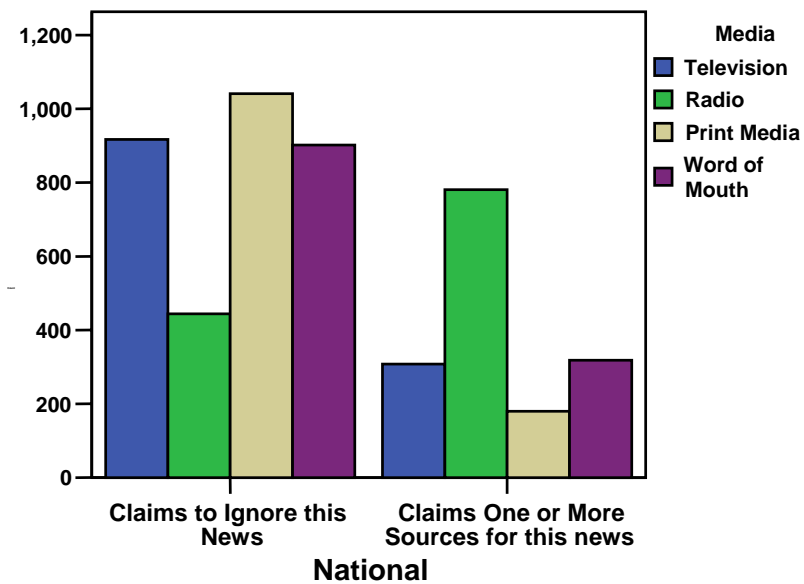
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<sup>8</sup> Farrell, Timothy. “Modernization and Community Development in Highland Guatemala” PhD Dissertation, 1977, UCLA.

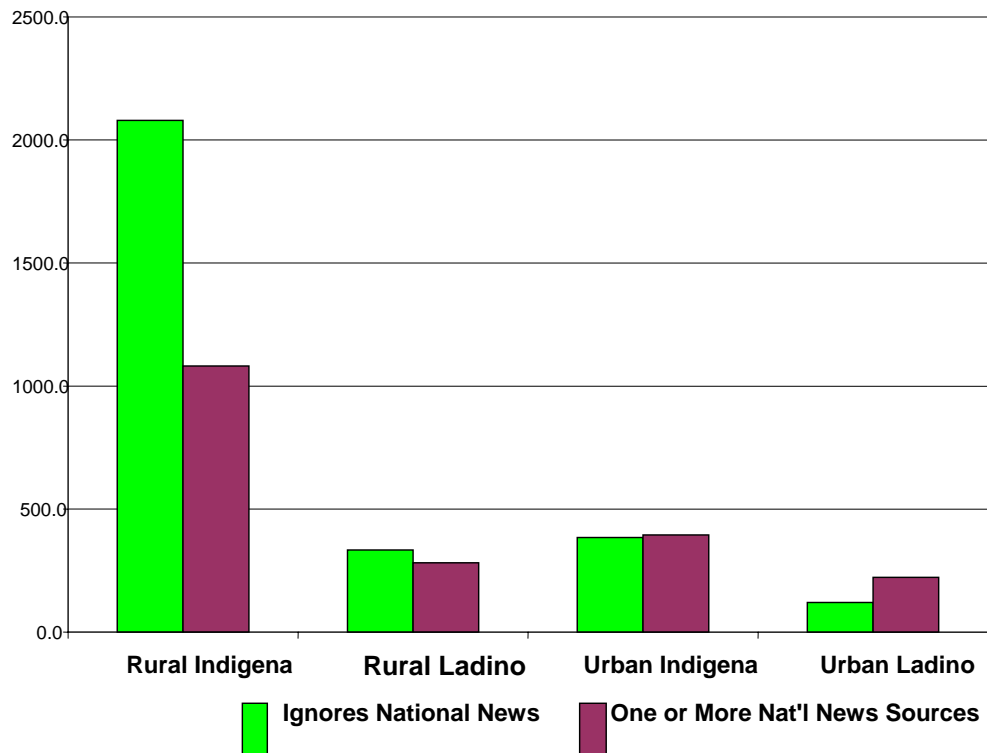
**Attention to Local News by Media**

This chart is of interest in that it probably suggests a cultural proscription against “gossip”, which is often the *only* source of ‘local news’ in small communities. Those people denying attention to local news are either completely saintly or give strict adherence to cultural norms regarding gossip. The following chart tends to confirm the cultural norm hypothesis where the great majority of the rural indigenous population say the “ignore local news”. Their urban counterparts show about a 50-50 adherence to this norm, about the same as rural ladinos; a significant majority of urban ladinos pay attention to local news.

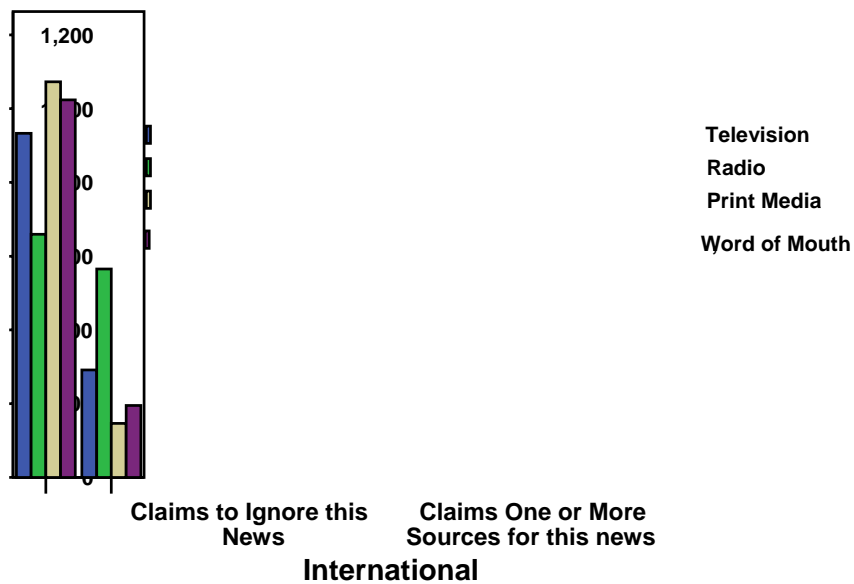
This pattern stays about the same with attention to national and international news only changing upward slightly in the proportion of the categories of households. The following charts show no significant change regardless of the level of information (local, national, and international) or the media involved.

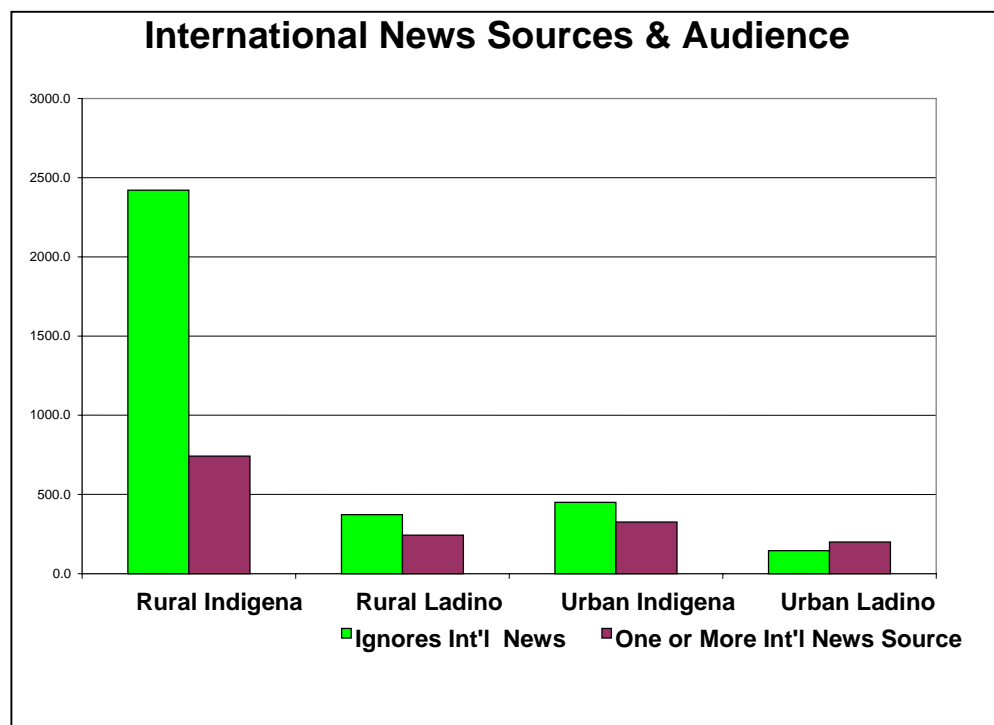
**Local News by Source & Audience****Attention to National News by Media**

### National News Sources & Audience



### Attention to International News by Media





### Conclusion Regarding Communications Media

These data are too 'thin' to generate a conclusion. As they stand they neither confirm nor reject general hypotheses regarding the role of media in development, especially without some specific criterion variable of development to consider.

One point is clear, nevertheless. There is a steady rise in the availability of media available in this area, and regardless of the type programming consumed (news vs. soap operas and sports and movies), there is bound to be external influence on this population.

### Participation in Community-based Organizations

Membership in local organizations demonstrates a willingness to promote and participate in activities deemed relevant to improving various aspects of life within the local community. Even in very small communities there usually are organized interest groups with some stated goal of improvement of living for the townspeople. While the majority are voluntary some NGOs require that individuals or households join a particular organization before they receive benefits. Additionally, some NGOs, mainly sponsorship and religious organizations also select only individuals that have certain characteristics: school-age children; certain level of poverty; or, a particular religion.

About a6% (412 of about 2400) of all household heads (male and female) participate in some form of voluntary organization. The type of organizations and their membership by urban and rural areas are presented in Table p-1. As can be seen, 45% of voluntary memberships are with religious organizations which may, or may not, have programs related to development activities. Interestingly enough, only 2 households claimed membership in any traditional

Mayan brotherhood or *cofradia*, while about 4% of the population define themselves as practitioners of Mayan religion.

The preponderance of memberships in all organizations is in the rural area (84%). Sig. 013.

**Table p-1 Participation in All Types of Community Organizations**

			Area		
			Rthal	Urban	Total
Type of Committee or Organization	Pro Salud	Count	19	0	19
		% within Type of Org	100.0%	.0%	100.0%
		% within Area	5.6%	.0%	4.6%
	Pro Educacion	Count	44	7	51
		% within Type of Org	86.3%	13.7%	100.0%
		% within Area	13.0%	9.5%	12.4%
	Pro Agua o Saneamiento	Count	20	2	22
		% within Type of Org	90.9%	9.1%	100.0%
		% within Area	5.9%	2.7%	5.3%
	Cooperativa Servicios Generales	Count	2	1	3
		% within Type of Org	66.7%	33.3%	100.0%
		% within Area	.6%	1.4%	.7%
	Cooperativa Ahorro y Crédito	Count	4	1	5
		% within Type of Org	80.0%	20.0%	100.0%
		% within Area	1.2%	1.4%	1.2%
	Cooperativa Agrícola	Count	8	2	10
		% within Type of Org	80.0%	20.0%	100.0%
		% within Area	2.4%	2.7%	2.4%
	Sociedades de la Iglesia o Templo	Count	143	43	186
		% within Type of Org	76.9%	23.1%	100.0%
		% within Area	42.3%	58.1%	45.1%
	Cofradía Indígena	Count	2	0	2
		% within Type of Org	100.0%	.0%	100.0%
		% within Area	.6%	.0%	.5%
	ONG o Grupo de Derechos Humanos	Count	0	1	1
		% within Type of Org	.0%	100.0%	100.0%
		% within Area	.0%	1.4%	.2%
	ONG o Grupo de Derechos de Mujeres	Count	4	3	7
		% within Type of Org	57.1%	42.9%	100.0%
		% within Area	1.2%	4.1%	1.7%
	ONGs Internacionales	Count	1	1	2
		% within Type of Org	50.0%	50.0%	100.0%
		% within Area	.3%	1.4%	.5%
	ONGs Nacionales o Locales	Count	4	0	4
		% within Type of Org	100.0%	.0%	100.0%
		% within Area	1.2%	.0%	1.0%

			Area		Total
			Rural	Urban	
Total	Comité Pro Mejoramiento en General	Count	53	3	56
		% within Type of Org	94.6%	5.4%	100.0%
		% within Area	15.7%	4.1%	13.6%
	Otra Organización de Desarrollo Comunitario	Count	34	10	44
		% within Type of Org	77.3%	22.7%	100.0%
		% within Area	10.1%	13.5%	10.7%
	Total	Count	338	74	412
		% within Type of Org	82.0%	18.0%	100.0%
		% within Area	100.0%	100.0%	100.0%

#### Chi-Square Tests Participation by Residence Area

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.771(a)	13	.013
Likelihood Ratio	30.877	13	.004
Linear-by-Linear Association	.233	1	.629
N of Valid Cases	412		

Table p-2 presents the same information (area by organization) but removes membership in religious organizations. The majority of the household heads remaining are members in generic development organizations (about 45%) and in education-focused organizations, with about 9% in health and water/sanitation committees. Human Rights organizations and cooperatives have the fewest members. Rural communities predominate by about the same percentages once religious organizations are removed (85%).

Table p-2 Area by Membership

			Area		Total
			Rural	Urban	
Type of Comite	Pro Salud	Count	19	0	19
		% within Type of Comite	100.0%	.0%	100.0%
		% within Area	9.8%	.0%	8.5%
	Pro Educacion	Count	44	7	51
		% within Type of Comite	86.3%	13.7%	100.0%
		% within Area	22.8%	22.6%	22.8%
	Pro Agua o Saneamiento	Count	20	2	22
		% within Type of Comite	90.9%	9.1%	100.0%
		% within Area	10.4%	6.5%	9.8%
	Cooperativa Servicios Generales	Count	2	1	3
		% within Type of Comite	66.7%	33.3%	100.0%
		% within Area	1.0%	3.2%	1.3%
	Cooperativa Ahorro y Crédito	Count	4	1	5
		% within Type of Comite	80.0%	20.0%	100.0%
		% within Area	2.1%	3.2%	2.2%
	Cooperativa Agrícola	Count	8	2	10
		% within Type of Comite	80.0%	20.0%	100.0%
		% within Area	4.1%	6.5%	4.5%
	ONG o Grupo de Derechos Humanos	Count	0	1	1
		% within Type of Comite	.0%	100.0%	100.0%
		% within Area	.0%	3.2%	.4%
	ONG o Grupo de Derechos de Mujeres	Count	4	3	7
		% within Type of Comite	57.1%	42.9%	100.0%
		% within Area	2.1%	9.7%	3.1%
	ONGs Internacionales	Count	1	1	2
		% within Type of Comite	50.0%	50.0%	100.0%
		% within Area	.5%	3.2%	.9%
	ONGs Nacionales o Locales	Count	4	0	4
		% within Type of Comite	100.0%	.0%	100.0%
		% within Area	2.1%	.0%	1.8%
	Comité Pro Mejoramiento en General	Count	53	3	56
		% within Type of Comite	94.6%	5.4%	100.0%
		% within Area	27.5%	9.7%	25.0%



			Area		Total
			Rural	Urban	
	Otra Organización de Desarrollo Comunitario	Count	34	10	44
		% within Type of Comité	77.3%	22.7%	100.0%
		% within Area	17.6%	32.3%	19.6%
Total		Count	193	31	224
		% within Type of Comité	86.2%	13.8%	100.0%
		% within Area	100.0%	100.0%	100.0%

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.200	11	.009
Likelihood Ratio	24.187	11	.012
Linear-by-Linear Association	.740	1	.390
N of Valid Cases	224		

Commitment to the goals of these organizations is best objectively measured not so much by membership or even office-holding, but rather by contributions in terms of time, labor and money. Labor and money (cash or materials) contribution was measured by a mutually exclusive scale 0 = attend meetings only through 5 = Two or more forms of participation in terms of labor or money.

Table p-3 Organization by Commitment

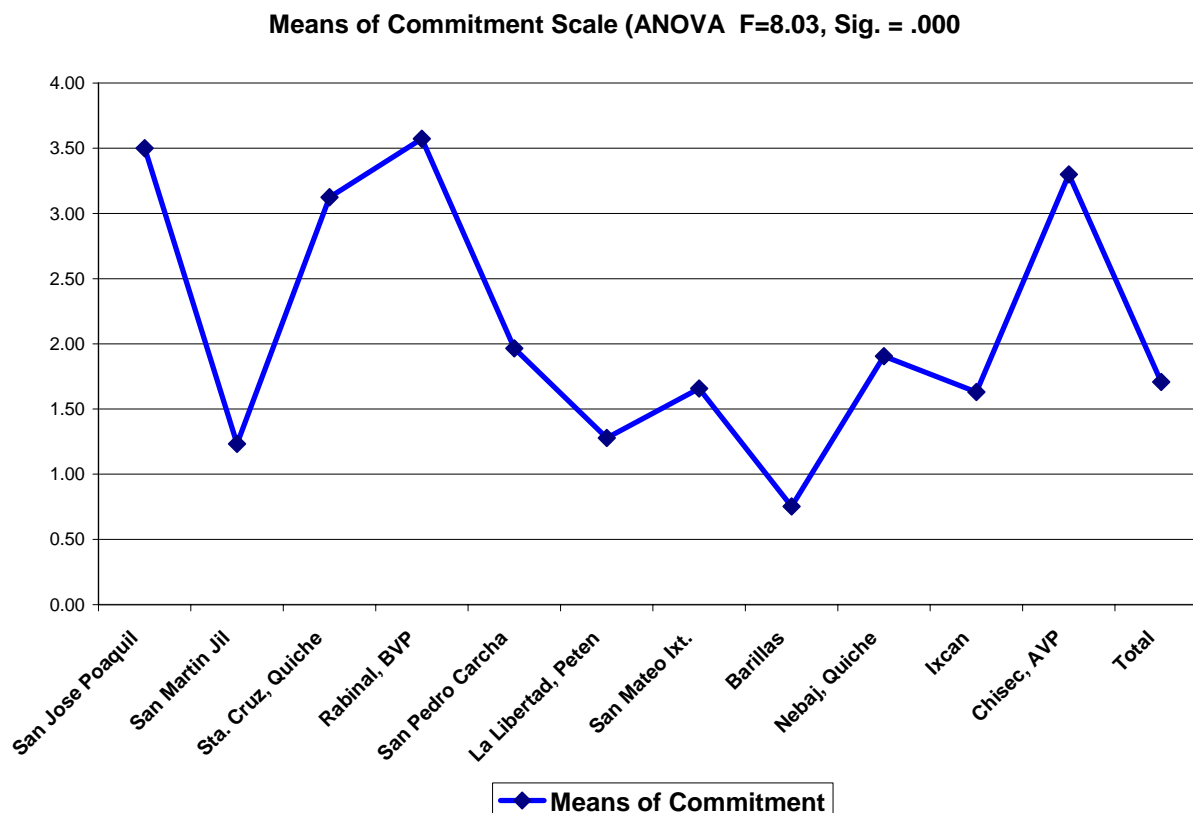
			Participation					Total participation by type of organization
			Attend Meetings Only	Contrib. Labor Only	Contrib. materials Only	Money only	Two or more forms of participation	
Type of Organization	Pro Salud	Count	3	9	1	0	6	19
		% w/in Org	15.8%	47.4%	5.3%	.0%	31.6%	100.0%
		% w/in Particip	5.3%	25.7%	16.7%	.0%	5.3%	9.0%
	Pro Educacion	Count	17	11	2	0	21	51
		% w/in Org	33.3%	21.6%	3.9%	.0%	41.2%	100.0%
		% w/in Particip	29.8%	31.4%	33.3%	.0%	18.6%	24.1%
	Pro Agua o Saneamiento	Count	7	3	1	1	5	17
		% w/in Org	41.2%	17.6%	5.9%	5.9%	29.4%	100.0%
		% w/in Particip	12.3%	8.6%	16.7%	100.0%	4.4%	8.0%
	Cooperativa Servicios Generales	Count	0	0	0	0	3	3
		% w/in Org	.0%	.0%	.0%	.0%	100.0%	100.0%
		% w/in Particip	.0%	.0%	.0%	.0%	2.7%	1.4%
	Cooperativa Ahorro y Crédito	Count	1	0	0	0	4	5
		% w/in Org	20.0%	.0%	.0%	.0%	80.0%	100.0%
		% w/in Particip	1.8%	.0%	.0%	.0%	3.5%	2.4%

		Participation					Total participation by type of organization
		Attend Meetings Only	Contrib. Labor Only	Contrib. materials Only	Money only	Two or more forms of participation	
Cooperativa Agrícola	Count	6	2	0	0	2	10
	% w/in Org	60.0%	20.0%	.0%	.0%	20.0%	100.0%
	% w/in Particip	10.5%	5.7%	.0%	.0%	1.8%	4.7%
ONG o Grupo de Derechos Humanos	Count	1	0	0	0	0	1
	% w/in Org	100.0%	.0%	.0%	.0%	.0%	100.0%
	% w/in Particip	1.8%	.0%	.0%	.0%	.0%	.5%
ONG o Grupo de Derechos de Mujeres	Count	2	2	0	0	3	7
	% w/in Org	28.6%	28.6%	.0%	.0%	42.9%	100.0%
	% w/in Particip	3.5%	5.7%	.0%	.0%	2.7%	3.3%
Int'l NGOs	Count	1	0	0	0	0	1
	% w/in Org	100.0%	.0%	.0%	.0%	.0%	100.0%
	% w/in Particip	1.8%	.0%	.0%	.0%	.0%	.5%
ONGs Nacionales o Locales	Count	1	0	0	0	3	4
	% w/in Org	25.0%	.0%	.0%	.0%	75.0%	100.0%
	% w/in Particip	1.8%	.0%	.0%	.0%	2.7%	1.9%

		Participation					Total participation by type of organization
		Attend Meetings Only	Contrib. Labor Only	Contrib. materials Only	Money only	Two or more forms of participation	
Comité Pro Mejoramiento en General	Count	11	5	2	0	34	52
	% w/in Org	21.2%	9.6%	3.8%	.0%	65.4%	100.0%
	% w/in Particip	19.3%	14.3%	33.3%	.0%	30.1%	24.5%
Other Type of Development Org.	Count	7	3	0	0	32	42
	% w/in Org	16.7%	7.1%	.0%	.0%	76.2%	100.0%
	% w/in Particip	12.3%	8.6%	.0%	.0%	28.3%	19.8%
Total	Count	57	35	6	1	113	212
	% w/in Org	26.9%	16.5%	2.8%	.5%	53.3%	100.0%

Generic development groups lead all others in terms of commitment as measured by this scale, with education following.

The next table, p-4 shows this commitment scale means by each municipio.



The above chart is interesting especially with regards to the low scores registered by Nebaj and Ixcan. Both of these communities have received considerably more attention from government and NGO agencies than the others, yet they score right at the mean for all municipios. San Mateo, on the other hand, which is an isolated area, and has not received much attention scores higher than its neighbor Barillas which is similarly situated. The same thing can be said about San José Poaquil and San Martin Jilotepeque which are very near to each other.

## Conclusions

Investors in development should probably take a more in-depth look at these contrasts. For example: Is there simply a dearth of leadership in some of these communities? Is outside stimulus a boon or does it inhibit local initiative? What kinds of leaders initiate local groups? Do religious-based groups contribute to larger community initiatives? (Recall that 45% of all voluntary group membership is religious based.) Why is participation in the traditional *cofradías* system so low with the resurgence of adherents to the Mayan Religion? Are non-affiliated generic development groups more apt to attract attention than those that may be formally or more directly associated with larger organizations such as national and international NGOs and cooperatives?

While “participation” is said to be a necessary component – basically a doctrine for NGOs – these data seem to indicate that a preponderance of people in this sample seem to prefer, and commit their resources to, unaffiliated local development groups.<sup>9</sup>

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<sup>9</sup> While nothing will dissuade “true believers” in the *sine qua non* of participation, development agnostics might want to read “**Participation: The New Tyranny?**”, edited by Bill Cook and Uma Kothari, Zed Books, London. 2002.